FEDERAL PROFESSIONAL SERVICES MARKET

1989 - 1994

INPUT

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Federal Information Systems and Service Program (FISSP)

Federal Professional Services Market, 1989-1994

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Abstract

According to this report, the federal market demand for professional services will sustain an 8% compound annual growth rate in the FY 1989-1994 forecast period. This market is now expected to increase from $3.2 billion in 1989 to $4.6 billion in 1994.

The federal professional services market will continue to remain highly competitive with increasing pressure from small business and minority-owned firms, as well as aerospace firms. In addition, the market continues to be highly price sensitive, with progressively narrower margins and more tightly controlled overhead. This report analyzes agency plans for future use of professional services. It also discusses vendor status, future market plans, and selection criteria; vendor performance characteristics; contracting policy and preferences; and major contract opportunities in this period.

This report now contains 239 pages, 68 Exhibits, and is an update of a previous report of the same title.

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FEDERAL PROFESSIONAL SERVICES MARKET 1989-1994

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AUTHOR

TITLE

DATE LOANED	BORROWER'S NAME

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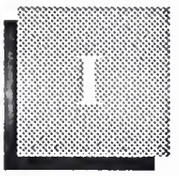

Introduction

The Federal Government Professional Services Market, 1989-1994 is a revision of an earlier report issued in May 1988. The report has been revised in response to continuing client interest in this changing market. The 1989 update identifies market issues and trends that impact professional services contractors and vendors entering the market through FY 1994. Insight into agency requirements and perceptions, and contractor guidance, are offered to help vendors plan their strategies to compete for federal professional services contracts.

This report on professional services activities that are provided to the federal government was prepared as part of INPUT's Federal Information Systems and Services Program (FISSP). Reports issued through this program are designed to assist INPUT's U.S. industrial clients in planning how to satisfy future federal government needs for computer-based information systems and services. The report's findings are based on research and analyses of several sources, including:

- INPUT's Procurement Analysis Reports (PARs)
- OMB/GSA/NBS Five-Year Information Technology Plans for 1989-1994
- Interviews with leading professional services contractors
- Interviews with federal agency officials who manage existing professional services contracts
- Interviews with prime contractors of existing professional services contracts
- Federal agency GFY 1989 and GFY 1990 Information Technology Budgets

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A

Scope

The period covered in the report is GFY 1989 through 1994. Vendor interviewees were selected because they were either identified as contractors of record for existing professional services contracts or listed as professional services vendors in INPUT's Company Analysis and Monitoring Service data base for 1988. The case studies of professional services projects were identified through previous INPUT Procurement Analysis Reports (PARs) or were suggested in conversations with clients. In order to obtain complete case study examples of awarded professional services projects, agency program managers and representatives of the prime contractor of record for specific projects were both interviewed.

For the purposes of the 1989 study, INPUT defined professional services to encompass the following categories of vendor products and services (see Appendix F for detailed explanations of each category):

- Software Development
- Consulting Services
- Education and Training
- Systems Operations (GOCO Facilities Management)

Unlike earlier INPUT studies of the professional services market, this report excludes systems integration, hardware and software maintenance after installation, and user acceptance as product categories for professional services.

B

Methodology

The OMB/GSA/NBS Five-Year Plan analysis for the INPUT Procurement Analysis Report was reviewed for programs to be initiated during the GFY1989-1994 period. INPUT also researched agency long-range plans for GFY1989-1994 to identify significant spending changes and leading and lagging agencies for professional services opportunities.

Two versions of the case study example questionnaire were developed to interview agency respondents and contracts (see Appendix F).

- The agency case study questionnaire was designed to acquire summary data on programs that have been awarded to professional services contractors. All case study examples were at least one year into the contract life cycle.

- In their case study questionnaire, contractors were asked the same questions, with slight variations from those asked of agency respondents.

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The questionnaires developed for agency officials and vendors for the earlier version of this report are also included in Appendix F:

- The agency questionnaires were designed to acquire information about current experience and plans for future use of professional services.
- The vendor questionnaire was designed to acquire information on industry status and future federal market plans.
- For comparison, both included similar questions about contracting policy and preference, selection criteria, and vendor performance characteristics.

Federal agency officials selected for interview in the current and previous editions of this report included:

- Contract officers
- Program managers

Industry representatives selected for interview in the current and previous editions of this report included:

- Marketing executives
- Technical executives
- Corporate executives
- Project/program managers of specific professional services contracts.

The current versions of the Federal Information Resource Management Regulations, Federal Acquisition Regulations, Defense Acquisition Regulation (changes to FAR), and Multiple Agreement Schedule policy were investigated to identify changes that will impact professional services contracts and/or contract performance. OMB Federal Contract Reporting Center data for GFY 1988 were reviewed to identify contract sizes, duration, modification trends, and vendor market shares.

C Report Organization

This report consists of five additional chapters:

- Chapter II is an Executive Overview describing the major points and findings in the report.
- Chapter III provides the market forecast and describes the major market issues and trends impacting the industry.
- Chapter IV summarizes federal agencies' requirements of professional services contractors and includes case study examples of professional services projects.

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- Chapter V presents the vendors' perspectives on the federal professional services market.

- Chapter VI provides a sample of business opportunities presented by programs and initiatives in the federal market that anticipate seeking the services of a professional services contractor.

Several appendixes are also provided:

- Interview Profiles
- Definitions
- Glossary of Federal Acronyms
- Policies, Regulations, and Standards
- Related INPUT Reports
- Questionnaires

Following the appendixes is a description of INPUT and its programs and services.

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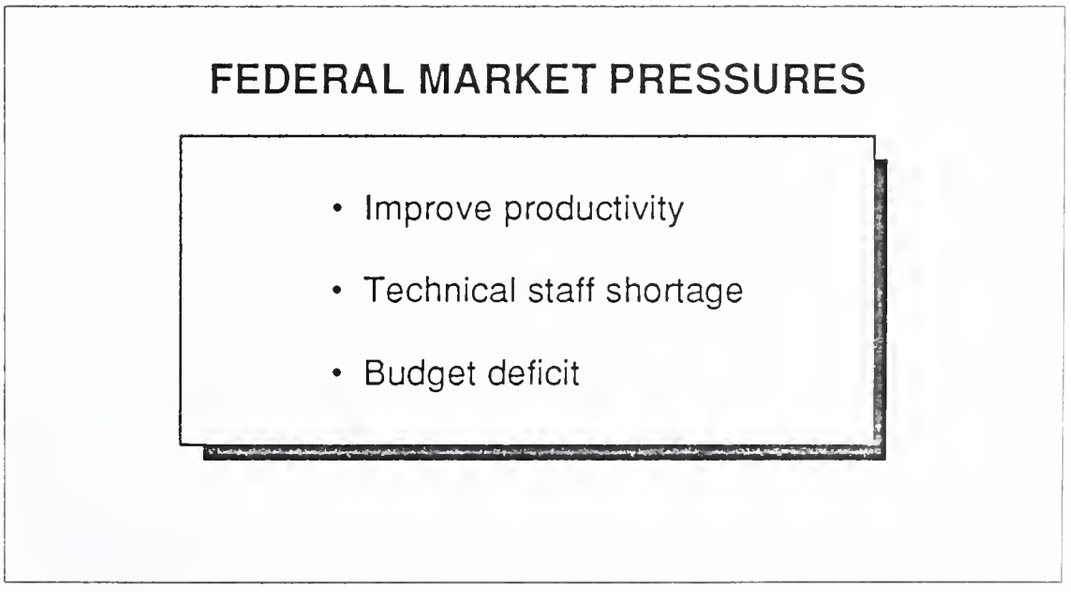
II

Executive Overview

A Federal Market Pressures

The federal market for information technology professional services is expected to continue to grow over the next five years. Some of the pressures driving this growth are listed in Exhibit II-1. Government programs require steady improvement in both the quality and quantity of information technology support.

EXHIBIT II-1



In its drive to improve productivity, to do more with less, the federal government is growing increasingly reliant on information technology. At the same time, functional and pricing trends, especially in terms of microcomputers and associated software, have opened new opportunities in government for using technology.

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Agencies continue a heavy commitment to maintain and enhance existing systems, as well as developing new systems. However, staff shortages effectively prevent in-house performance of these tasks. Further, pressure to reduce the federal budget deficit increases the importance of efficiency and innovation.

The Reagan administration encouraged contracting out many formerly in-house activities, including professional services. The growing emphasis on OMB Circular A-76, as well as Executive Order 12615 ("Performance of Commercial Activities"), illustrates the bias toward contracting out. At an increasing rate, agencies must use professional services firms to take advantage of the technology and reach productivity goals.

Federal personnel policies also support more use of professional services firms. Practically all agency executives that INPUT interviewed cited difficulty in hiring staff with strong technical credentials. In the Washington area, at least, good candidates can frequently obtain higher salaries and better benefits in the private sector than in the government. Thus, many employees with fewer than 15 years of service are leaving government. Agency executives, usually with more than 20 years of service and looking toward retirement, must contract out most of their technical support activities.

B

Market Forecast

INPUT estimates that the federal professional services market will increase from $3.2 billion in FY 1989 to $4.6 billion by 1994, a compound annual growth rate of 8%. Exhibit II-2 displays a breakdown of the market into four subordinate areas.

As noted in the exhibit, INPUT expects systems operations to experience the greatest growth rate over the next five years. In previous years, INPUT included the professional services portion of systems integration within the professional services forecast. The SI portion of the forecast usually showed the greatest growth rate, increasing the rate of the overall professional services market. Now INPUT has excluded this delivery mode causing the CAGR to be lowered from previous estimates.

This year's forecast showed a big increase in the systems operations (GOCO) delivery mode. Last year's CAGR was projected at 13%, and this year it rose to 15%. The shortage of in-house technical experts, as discussed above, limits many agencies in managing their centers. More and more agency executives are looking to the marketplace for creativity and innovation in solving government problems.

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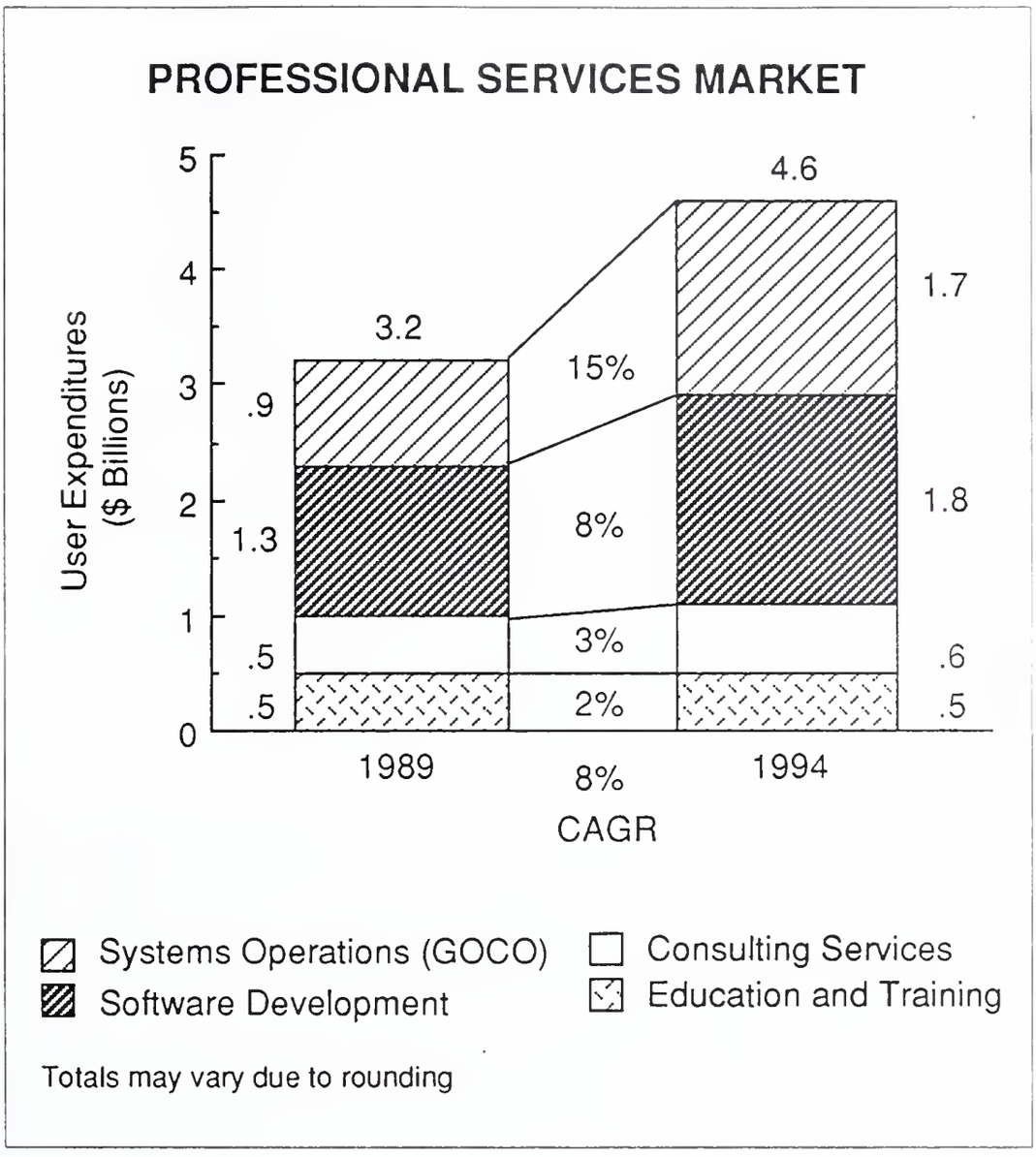
EXHIBIT II-2



Though software development has traditionally taken the biggest piece of professional services, INPUT now finds this changing. The growing use of software packages, as well as agency policies encouraging their use, is dampening the increase in this category. The other categories are also growing more slowly, due primarily to a folding of these activities into systems integration.

C

Key Application Areas

Professional services have supported and will continue to support a wide variety of application areas. While DoD and civilian agencies differ somewhat in their emphasis, the application areas of administration and data management dominate their responses, as shown in Exhibit II-3. Logistics support is also becoming more important, as agencies move to automate supply and delivery processes.

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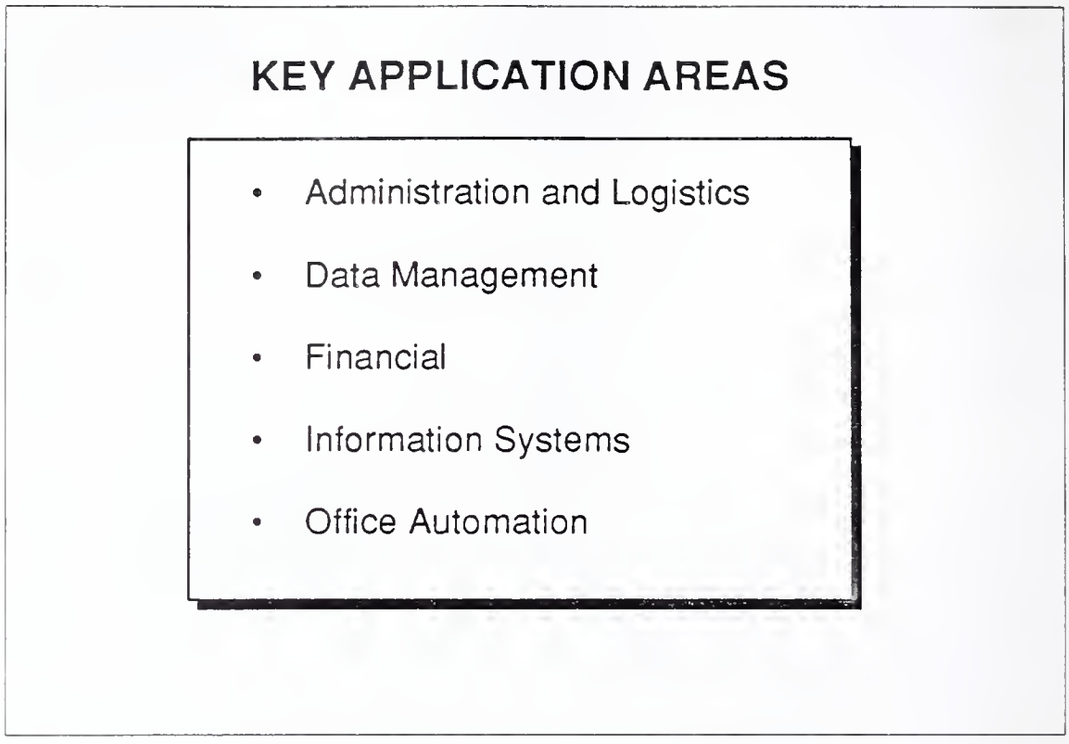
EXHIBIT II-3



Financial activities, along with logistics, compose the largest single set of applications. Other applications cover a range of information systems and appear unique to individual agencies. However, many agencies mention office automation, LANs, distributed processing, and centralized data base applications.

D

Competitive Forces

INPUT's listing of the top five professional services vendors is in Exhibit II-4. This listing does not change significantly from year to year. CSC and Unisys have retained their rankings from INPUT's 1988 report, while other vendors' rankings usually fluctuate.

The federal professional services market continues to grow more competitive as more firms enter the market and margins grow tighter. Further, the government sets aside many professional services opportunities for small businesses or 8(a) firms. While larger companies can team on many of these opportunities, new rules on subcontracting will limit their participation.

Many companies that traditionally did not participate in this market are now beginning to play a major role. Aerospace firms, "Big 8" accounting firms, and even some specialized niche vendors are strengthening their Washington area offices to pursue this market.

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EXHIBIT II-4

TOP-FIVE FEDERAL GOVERNMENT PROFESSIONAL SERVICES VENDORS 1988

Vendor	Rank*
Computer Science Corp.	1
Unisys	2
SAIC	3
TRW	4
CDSI	5

* Based on Federal Contract Award Data for GFY88 and information from vendors.

E

Agency Satisfaction

The overall level of satisfaction with contracted professional services remains fairly low. Exhibit II-5 compares agency satisfaction levels (both DoD and civilian) with vendors' perception of those satisfaction levels. For the most part, vendor responses corresponded to those of agency counterparts.

The low satisfaction levels expressed by vendors and agencies represent a fundamental vendor problem that vendors believe can be alleviated by holding down costs and adhering to delivery schedules.

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EXHIBIT II-5

AGENCY SATISFACTION WITH PROFESSIONAL SERVICES VENDORS

Vendor Quality	Ratings*		
	Civil	DoD	Vendor
Delivery Schedule	2.8	3.3	2.9
Cost	2.9	3.8	3.2
Project Management	2.9	3.4	3.1
Development Visibility	3.1	3.6	3.1

* Scale of 1 to 5, with 5 being highest

Updated 1988

F

Characteristics of Successful Contractors

As another measure of agency satisfaction, Exhibit II-6 compares the views of agencies and vendors on the characteristics of successful contractors. In this case, DoD and civil agencies differed sharply on the rankings of vendor characteristics. The DoD ranked price and software development experience as most important, while the civil agencies ranked staff experience as number one and price as number two. It is interesting to note that vendors ranked these three characteristics as high as the agencies.

G

Recommendations

Vendors need to accept the notion that though program managers may prefer incentive contracts, most contracting officers still prefer to do business on a fixed-price basis. Vendors need to find, and put into practice, methods of pricing and managing professional services contracts that allow them to minimize risk. To constrain costs and remain competitive, vendors should make maximum use of automated tools to increase their productivity. INPUT also recommends the steps listed in Exhibit II-7.

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EXHIBIT II-6

RANKINGS OF CHARACTERISTICS OF SUCCESSFUL CONTRACTORS

Characteristic	Ranking*		
	Civil Agencies	DoD Agencies	Vendors
Price	2	[1]	[1]
Support	4	4	(7)
Staff Experience	[1]	5	2
Software Development Experience	3	[1]	3
Application/Functional Experience	4	3	6
Federal Contract Experience	6	(7)	4
Agency Experience	(7)	5	4

* Ranking: 1 = Most Important (□), 7 = Least Important (○)

EXHIBIT II-7

RECOMMENDATIONS

- Vertically penetrate agency customers
- Maintain positive reputation
- Survey clients for potential problems
- Stress standards and interoperability

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Vertical penetration relates to supporting agencies at a series of points in the systems process, rather than just through a single contract. For example, a successful system design may lead to substantial follow-on work in systems implementation. This kind of account control can frequently be very profitable for professional services vendors.

Maintaining a positive reputation is critical in the federal market, despite stringent procurement rules. Regardless of how evaluation criteria are written, agencies can usually find a way to avoid contract awards to an unwanted bidder. Vendors could further improve their reputations by surveying their clients and then resolving issues that appear to exist.

Finally, professional services vendors can improve their competitive position by stressing standards and interoperability. Standards are a hot issue right now in the federal market, since so many systems need to communicate. Systems developed in accordance with published standards will be more valuable to agency customers.

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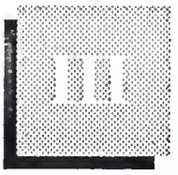

Market Analysis and Forecast

A

Overview

Over the past few years, the federal government's use of professional services contracts has grown considerably. This growth has occurred despite continuing budget constraints in many agencies. It arises from various factors, including personnel policies, technically complex functional requirements, and growing support requirements, which are discussed later in this chapter.

The forces driving this growth are not likely to abate during the Bush Administration. As a result, federal demand for professional services will continue to grow faster than both the total federal IS budget and the total federal budget.

This growth has led to intense competition for available contracts. Many companies formerly on the periphery of this market, and that historically focused on other areas, are now pursuing this market. This growth, along with client interest, has also led INPUT to update this report every year.

B

Market Forecast, 1989-1994

The federal professional services market will grow from $3.2 billion in GFY 1989 to $4.6 billion in GFY 1994, at a compound annual growth rate of 8%, as illustrated in Exhibit III-1. This represents a dampening of the previous expected growth rate of 13%.

The change occurred primarily as a result of a reorientation of INPUT's delivery mode categories. In addition to the four categories discussed below, INPUT formerly also included the professional services portion of the systems integration (SI) market. Since this category showed the highest growth rate, it raised the rate for the entire professional services market.

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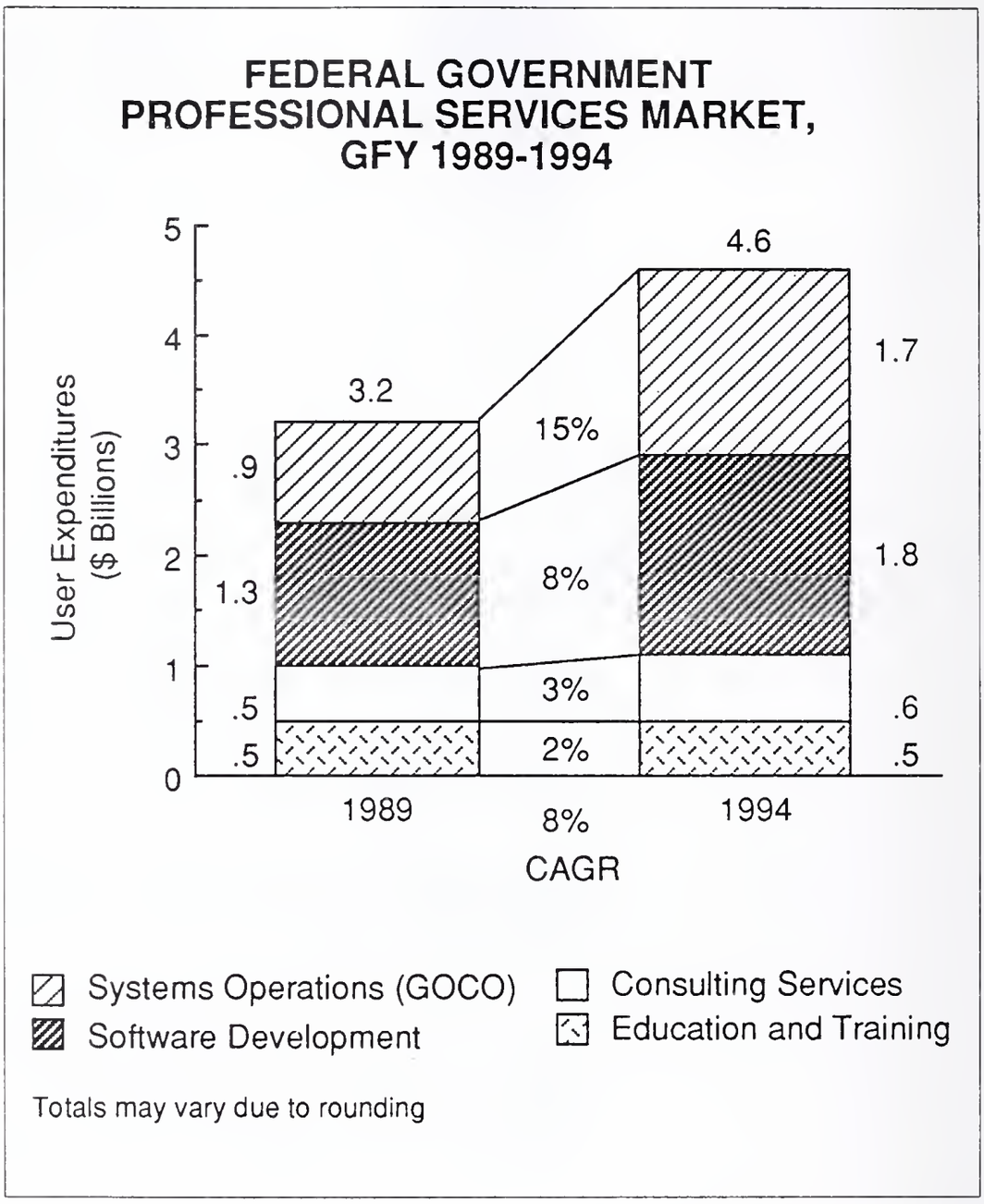
EXHIBIT III-1



In the absence of the SI category, systems operations (GOCO) now shows the greatest growth rate. Last year's CAGR for operational support, 13%, has grown to 15% in this year's forecast. Agency budgets showed surprising strength in this area, with many agencies sharply increasing their spending plans. This probably reflects the continuing difficulties many agencies are experiencing in hiring and retaining technically competent employees.

Professional services are rendered to government agencies under a variety of task names and functions. For consistency within this report and with other INPUT reports on the federal government market, professional services are defined and discussed in the following categories (also see Appendix B):

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- Consulting Services
- Education and Training
- Software Development
- Systems Operations (facilities management); for example, Government Owned/Contractor-Operated (GOCO) projects

1. Consulting Services

Consulting services in the federal market include information systems and/or services management consulting, program assistance (technical and/or management), feasibility analysis, and cost-effective trade-off studies. Examples of government consulting services contracts are:

- Feasibility studies
- ADP requirements analyses
- System audits
- System Engineering and Technical Direction (SETD)
- System Engineering and Technical Assistance (SETA)

It also includes the initial design of systems, as well as the Independent Validation and Verification (often referred to as IV & V) of newly installed systems. System development, however, is included in the software development category.

Consulting services will grow from $480 million in 1989 to $540 million in 1994, at a CAGR of 3%. This represents a sharp decrease over last year's predicted growth rate, arising from the following factors:

- Although short-term spending will rise more than 12%, spending in later years will actually decline, thus lowering the overall growth rate.
- Budget constraints are preventing defense agencies from contracting out their consulting. This becomes especially apparent on mission-oriented programs (such as weapons systems) that are stretched out.
- The growing level of competition is stabilizing, and in some cases actually lowering, prices. Although reductions may create some problems (discussed later in this report), they do tend to reduce spending.

Despite these long-term trends, INPUT still anticipates a growing, vigorous federal market for design and consulting services. This forecast is based in part on the following developments:

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- A new study by the Office of Personnel Management shows a worsening problem in the availability of in-house, skilled, technical personnel. This will further drive up the requirement for outside consulting.

- Budget constraints are forcing agencies to cost-justify more of their information technology initiatives. In the past year, Federal Information Processing Services Publication (FIPS PUB) 64 has become more accepted as the means to perform this justification. These economic analyses, as they are frequently called, are usually contracted out, often to SETA contractors.

- In the past year, GSA's FEDSIM and Office of Software Management have awarded new Basic Ordering Agreements (BOAs) that make it easier for agencies to use consultants. For example, GSA awarded a contract to Comsis for helping agencies develop Computer Security Plans for submission to NIST.

The Navy has initiated a program that may cause some dampening of this forecast. It has announced plans to hire more than 3,000 engineers to replace contractors in various program management activities. Most of these workers would not be included in the information systems area. However, there would definitely be an overlapping effect. INPUT has not taken this hiring into account in the current forecast for two reasons:

- The initiative is now only at the planning stages, making it too early to judge how it will turn out.

- INPUT doubts the viability of the idea, especially in the Washington metropolitan area where many of the programs are managed. The pay and benefits gap is just too great to attract thousands of experienced engineering employees.

2. Education and Training

Education and training services relate to information systems and services for the user, including CAI (computer-aided instruction), CBE (computer-based education), and vendor instruction of user personnel in operations, programming, and software maintenance. The government normally contracts for:

- Training programs
- Books and manuals
- Seminars
- Automated training systems

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Federal spending for education and training will grow from $470 million in 1989 to $510 million in 1994, at a CAGR of 2%. This represents a dramatic increase over last year's forecast for the year 1989, but slower growth in the out years. Training spending was slightly lower in 1988 than had been expected, then jumped sharply in 1989. In a highly unusual move, Congress mandated training in the Computer Security Act. This has led to a proliferation of courses aimed at federal IS personnel, most of which seemed to be doing well. Later this year, INPUT will publish a new report on the federal computer security market, which will include a sizing of security training.

A more fundamental issue is driving the need for training. During the budget-constrained years of the Reagan administration, training was cut severely. In most cases, when budgets are cut, training and travel are usually the first items to be eliminated. This lack of training has led to growing inefficiencies in the use of computer systems as well as misunderstandings on their potential. Agencies have begun to realize these problems, and have reinstituted training programs, especially for entry-level personnel. These plans are reflected in the most recent agency budgets.

Finally, training is now being included in most systems integration projects, both large and small. This bundled approach enables small, training-oriented companies to participate in large procurements as subcontractors. Although these opportunities are not included in this forecast, they still represent an important consideration.

3. Software Development

Programming and analysis services, also called software development, include system design, contract or custom programming, code conversion, benchmarking, and software maintenance. The government usually contracts for:

- Hardware and/or software system design
- Custom software development
- Modification of off-the-shelf software products
- Software testing of custom-developed and commercial packages
- Software conversion
- Maintenance of operating and applications software

Software development spending will increase from $1.3 billion in 1989 to $1.8 billion in 1994, for a compound annual growth rate of 8%. This represents a slight reduction from last year's forecast. However, this rate is substantially less than the 22% rate during the mid-1980s. Program rescheduling and reductions in ongoing contracts reflect agency efforts to retain in-house staffs. The shortfall in programming skills of the federal government sector will continue to be the most significant factor behind

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the projected growth in the out years. Government staff limits and the backlog of software maintenance tasks at most government data centers also contribute to the demand for vendor assistance in this service mode.

OMB's continuing emphasis on software products, standardized software, and agency sharing is holding down growth in this market. Further, the growing availability of programmer workbench products and other productivity tools will help to reduce the cost of new software being developed.

4. Systems Operations Support

Systems operations or professional services facilities management (PSFM) is also referred to as GOCO (Government-Owned/Contractor-Operated) ADP. The computing equipment is owned or leased by the government, not the PSFM vendor; the vendor provides the staff to operate, maintain, and manage the government's facility. GOCO also includes operations and maintenance (O&M) contracts, which differ from PSFM in that vendors have less or no direct management/control of the facility. Both second- and third-party maintenance is included. Typical contract tasks in this submode include:

- Operation and management
- Hardware maintenance
- Software maintenance
- Site preparation and installation

In INPUT's Market Analysis and Planning Service (MAPS) report on the federal sector, hardware and software maintenance are broken out separately. However, maintenance was retained for this category in the federal report, in response to client preferences.

The systems operations (GOCO) market will grow from $900 million in 1989 to $1.7 billion in 1994, at a CAGR of 15%. This forecast shows a faster growth rate than that provided in last year's report. Surprisingly, this submode is growing faster than the rest of the professional services market, and reflects agencies' continuing difficulty in staffing computer centers internally.

Standalone maintenance contracts for both hardware and software have been included in the submode. Most maintenance and repair activities are funded through the operations, maintenance, and repair (OM&R) budgets of the agencies. OM&R budget requests are not supported by detailed documentation, as are major new and replacement ADP/telecommunication systems. The facilities management market is treated in greater detail in a companion INPUT FISSP report, Federal ADP Facilities Management and On-Site Operation and Maintenance Services Markets. INPUT will update that report later this year.

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In previous Federal Professional Services Market reports, INPUT included a fifth category—the professional services portion of systems integration. This submode was also included in the systems integration report. Beginning with this year's report, INPUT will include this item only in the Federal Systems Integration Market report, to be published later this year.

C

Vendors of Professional Services to the Government

Exhibit III-2 lists the top professional services vendors to the federal government during 1988. Although the listed vendors do not fluctuate dramatically from year to year, rankings do. CSC and Unisys, however, have retained their rankings from INPUT's 1988 report. The continually changing demands for different services and the patterns of vendor teams for different programs make a complicated competitive structure. Very frequently, today's bidding partners are tomorrow's competitors.

This market is dominated by professional services and computer hardware firms. These vendors make available a broad range of skills to meet planning, development, integration, and implementation requirements.

- Professional services vendors offer services that can include the acquisition, assembly, and integration of hardware, communications, and software. These vendors do not typically manufacture hardware. Representative vendors include Computer Sciences Corporation, Electronic Data Systems, BDM International, Planning Research Corporation, and Systemhouse. This group also includes firms that have been spun off from parent organizations not in the information services industry (e.g., Boeing Computer Services, Martin Marietta, and Grumman Data Systems).

- The presence of some of the better-known hardware vendors as leaders in the federal professional services market is derived from their increasing thrust into alternative areas of the information systems and services marketplace. Smart vendors have been broadening their revenue streams in addition to their traditional lines of business.

A growing force in the market is the professional services activities of tax/audit firms, although they have not been included in the top-twenty vendor list. Active "Big Eight" accounting firms include Andersen Consulting; Peat, Marwick & Main; Price Waterhouse; Coopers and Lybrand; and Deloitte, Haskins and Sells. At this writing, some consolidations and merger activity have been announced. It is too early to predict what effect this will have on the federal market.

Not-for-profit organizations, including corporations such as MITRE, Aerospace Corporation, and Sandialan (an AT&T subsidiary) and colleges and universities (e.g., Carnegie Mellon, University of California, Batelle Memorial Institute), also compete with private industry for professional services work from the federal government.

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EXHIBIT III-2

TOP FEDERAL GOVERNMENT PROFESSIONAL SERVICES VENDORS, 1988

Rank	Vendor	Market Share* (Percent)
1	Computer Science Corp.	17.3
2	Unisys	13.3
3	SAIC	11.6
4	TRW	6.3
5	CDSI	5.2
6	Grumman Data Systems	4.6
7	Harris Corporation	4.6
8	PRC/Emhart	4.5
9	Electronic Data Systems/General Motors	3.9
10	McDonnell Douglas	3.3
11	Lockheed (LEMSCO)	2.8
12	Litton Computer Services	2.7
13	IBM	2.7
14	American Management Systems	2.5
15	Vanguard/Cincinnati Bell	2.4
16	Groupe Bull	2.0
17	MITRE	1.7
18	General Dynamics	1.6
19	EG&G Inc.	1.5
20	General Electric/RCA	1.5

* Based on Federal Contract Award Data for GFY88 and information from vendors: 20 vendors hold 96% of the market.

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Finally, some government data centers with unique skills and/or available capacity also compete with private industry for government contracts. Government agencies have the choice of whether to contract outside or to use available government centers, including capabilities in other agencies. In many cases the cost may be the same, but by staying "in-house," the agency saves the time and effort required to put a contract into place competitively.

D

Market Size by Agency

The information presented in Exhibit III-3 provides FY88 and FY89 budget data extracted from the Office of Management and Budget Circular A-11 agency reports. Exhibit III-3 does not cover the entire federal government, but does include many of those agencies surveyed by INPUT.

Unlike last year, the Army no longer spends the most on consulting, education, and training. The new budget data reflects a significant drop in this area, probably resulting from overall budget cuts. The GSA, on the other hand, has vastly increased its spending in this area, reflecting in part the growing popularity of both the zonal Basic Ordering Agreements (BOAs), as well as those from FEDSIM and the Software Management Center.

In software development, the Air Force continues to lead the way, with numbers almost identical to those of last year. However, GSA has moved ahead of Energy, again reflecting the popularity of the BOA contracts. Interviews conducted for past reports suggests that more Air Force programs require outside contractors for software development. The Air Force is not necessarily spending more, but it is spending more on contractors.

All three military services make heavy use of systems operations services, as do Energy and NASA, which have a tradition of using contractors for the management of facilities.

Unlike past years, civil agencies are now showing more potential for growth than defense. This potential reflects the effect of budget constraints on defense agencies, as well as the maturation and, in some cases, winding down of major defense programs. However, since civil programs tend to be less formalized and homogeneous, successful vendors will need to invest more in both marketing and sales efforts.

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EXHIBIT III-3

FEDERAL GOVERNMENT AGENCY PROFESSIONAL SERVICES BUDGETS GFY 1988-1989

$ Millions						
Consulting, Education & Training		Software Development		Operations & Maintenance		
1988E	1989F	1988E	1989F	1988E	1989F	Agency
9	7	33	22	59	65	Agriculture
15	12	14	12	61	67	Commerce
1	2	5	9	30	31	Education
34	35	252	265	214	234	Energy
115	235	290	311	46	42	GSA
16	18	62	58	79	85	HHS
<1	<1	17	30	15	19	HUD
6	4	21	18	39	43	Interior
4	6	16	16	89	100	Justice
1	1	12	12	29	22	Labor
32	34	319	362	318	352	NASA
1	1	13	14	22	25	State
4	3	42	45	43	51	Transportation
7	7	27	28	146	163	Treasury
25	25	462	469	306	362	Air Force
23	24	217	199	333	365	Navy
35	35	216	212	280	352	Army
5	5	6	7	25	28	DLA

E: Estimated
F: Forecasted

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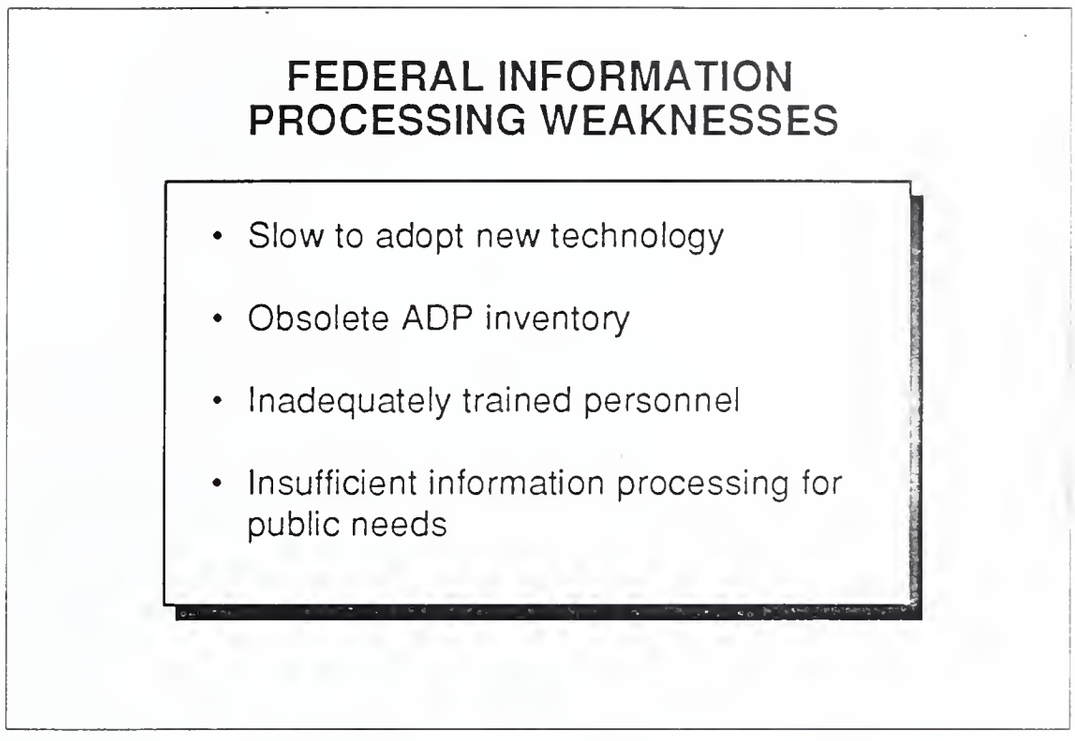
E

Federal Market Issues

During the two most recent administrations, presidential task forces investigated the problems and technological status of the federal government's information processing resources. Findings are shown in Exhibit III-4. The investigation showed significant shortcomings:

EXHIBIT III-4



- The government has not taken full advantage of the technological advances of the private sector.
- A substantial amount of the ADP inventory was already obsolete or rapidly becoming so.
- Federal executives have not managed ADP resources effectively.
- Federal personnel were not adequately trained in the use of information technology.
- Major initiatives were urgently needed to bring federal information management to the level needed for regulation, taxes, security, and services to the public.

These findings, along with some fundamental changes in GSA's information systems (IS) management policies, led to gradual changes in IS procurements. By agreement between GSA and the House Government Operations Committee, delegations are not required for professional services procurements that do not involve computer processing. The

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procurement changes, as well as the factors cited in section A previously, have fueled the growth for federal professional services opportunities. INPUT expects this growth to be sustained for the indefinite future. These changes, coupled with poor personnel practices, have fueled the growth for federal professional services opportunities. INPUT believes that this demand will be sustained.

Major civil systems affect service to the public and have greater political appeal than research programs. Deficit control measures, especially those under the Gramm-Rudman-Hollings (GRH) Act, are forcing agencies to cancel programs that do not meet stringent productivity improvement requirements and, in some cases, delay or stretch those that do. However, at this writing, Congress appears to be backing away somewhat from the GRH targets.

Systems acquisitions in the second half of the 1980s addressed needed improvements in management, administration, human resources, and logistics functions that have not received newer data processing resources in more than a decade. These have been reflected in the focus of professional services procurements. Congress urgently needs more precise and timely data for the legislative process. Administration decisions require complete data on domestic issues and regulatory affairs in order to satisfy congressional mandates.

1. Historical Perspective

The federal professional services market is not subject to as many federal policies and regulations as other types of procurements. However, agencies and vendors must still understand the rules in order to function effectively. Earlier, federal ADP and telecommunications systems were procured and managed for more than two decades by the FPRs, FPMRs, and ASPRs. ADPE and services procurements were modified by the 1966 Brooks Act and subsequent amendments.

The Paperwork Reduction Act of 1980 includes a number of provisions concerning information resource management and system acquisition. The Act:

- Created the post of Information Resources Management senior official in each department and major agency.
- Placed all but sensitive and mission-essential ADP under a new "mini-Brooks Bill."
- Provided a separate approval procedure for national security and defense mission ADP.

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- Authorized annual preparation and publication of a Federal Agency Five-Year Plan for major ADP/Telecom Acquisition by OMB and GSA.

Most major professional services contracts are included in agency five-year plans. Frequently, the professional services are tied in with other activities, even if agencies intend to contract for them separately.

Under the authority of the Federal Administration Act and the Paperwork Reduction Act, GSA prepared and made effective in April 1984 a new regulation for information resources. The Federal Information Resource Management Regulation (FIRMR) superseded the FAR and FPMR in information technology areas. GSA intended that the FIRMR would streamline the information resources acquisition process. GSA is now rewriting the FIRMRs to reflect significant legal and regulatory changes. At this writing, a new FIRMR has been issued by GSA, but not yet formally implemented. Its impact is yet to be determined.

Other regulations and policy initiatives that are changing the acquisition procedures include:

- The Competition in Contracting Act (CICA) of 1985 provided expanded legal powers for ADP protest action via the GSA Board of Contract Appeals (GSBCA) and GAO, increased the opportunity to employ negotiated contracts, and established seven more-restrictive categories of exceptions that permit sole-source awards, as shown in Exhibit III-5. Agencies view the CICA as allowing vendors to complicate and lengthen the acquisition process. The Act's provisions make it easier for vendors to protest procurement activities and bring temporary halts to procurement schedules. Many professional services contracts are protested under CICA.

- The Paperwork Reduction Reauthorization Act of 1986 expanded the power of the GSBCA, but also retained the Warner Amendment, which provides DoD with mission-critical ADP procurement exemptions to Brooks Act coverage, except for application of general-purpose ADPE in noncritical functions, such as testing, recalibration, and programmer workbenches.

Several issues have arisen that are now being studied. These include software rights, data rights, and second-sourcing of some systems. INPUT expects these issues to continue to create problems on some procurements.

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EXHIBIT III-5

INTENT OF THE COMPETITION IN CONTRACTING ACT

- Provide for equitable resolution of protests through expanded GSBCA and GAO legal powers
- Foster more competitive opportunities
- Clarify sole-source award categories

As is well known in the vendor community, the CICA has not achieved what was expected, as listed in Exhibit III-6. The CICA was expected to improve competitive opportunities, while the GSBCA provided more-equitable resolution of protests. The results have been anything but equitable. Today, virtually all major procurements are protested. A new word has entered the federal procurement vocabulary—fedmail. Some agencies and winning vendors are providing payments to protesters in order to secure withdrawal of the protest. As a result, a new growth industry is developing for lawyers specializing in federal procurement. GSA's most recent studies suggest that fedmail is becoming less common, although it has not yet disappeared completely. Most successful protests result from one or more of the following defects:

EXHIBIT III-6

EFFECTS OF THE COMPETITION IN CONTRACTING ACT

- Increased protest actions
- Lengthened acquisition process
- Development of "fedmail"

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- Failure to follow stated evaluation plans
- Procurement process inconsistencies
- Improper documentation
- Defective pricing
- Inconsistent information dissemination

This limited procurement review has eliminated much of the expert examination of procurement actions. Many vendors now believe that more review is needed. Some have even indicated that, in certain circumstances, losing can be more profitable than winning.

A new office in GSA has begun issuing quarterly reports on GSBCA activity. Based on analyses of protest decisions, it is apparent that evaluation procedures represent the biggest source of trouble. If agencies lock themselves into too tight an evaluation model, any deviation usually results in a sustained protest. Therefore, GSA has recommended more-flexible evaluation models, giving the selection official and contracting officer more latitude in comparing cost and technical considerations. This complicates the bidding on professional services contracts, since the trade-offs between price and offerings are not always clear.

A new concern has arisen over schedule procurements, with regard to the requirements for synopsizing and obtaining delegations of procurement authority. There are conflicting opinions on whether these changes will affect the volume of sole-source procurements. However, they will likely have little effect on professional services contracts.

Agency source selection activities and acquisition policy officers have observed growing failure of the vendor community to become familiar with the bidding and evaluation conditions imposed by FIRMR and FAR. On the other hand, many contracting officers also have shown an inability to keep up with the regulations.

2. Budgetary Constraints

Future-year funding of current acquisition programs and approval of funding for the next budget year are always in doubt in the federal government market. The authorization of an agency budget and the requested information sources by the agency oversight committee do not assure the agency or vendors that funds will be provided in the out years. Appropriation Acts for agencies approve the TOA (Total Obligational Authority) for certain large systems, but not the fiscal year or years in which the funds will be available (called outlays).

Continuing economic and political sensitivity to the large national budget deficit could negatively impact a number of acquisitions in the less-than-critical defense and civil technology sectors. Presidential election years

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often imply budgeting for political rather than practical reasons, which led to the budget cuts in FY88. Major ADP systems already approved were continued in preference to unapproved programs.

Major civil systems affect service to the public and have greater political appeal than research programs. Deficit control measures, especially those under the Gramm-Rudman-Hollings (GRH) Act, could force agencies to cancel programs that do not meet stringent productivity improvement requirements and, in some cases, delay or stretch those that do. However, as already pointed out, Congress appears to be backing away somewhat from the GRH targets; most agencies have not yet experienced any major effects from the act.

Systems acquisitions in the second half of the 1980s have been addressing needed improvements in management, administration, human resources, and logistics functions that have not received newer data processing resources in more than a decade.

Administration decisions require complete data on domestic issues and regulatory affairs in order to satisfy Congressional mandates. Agency executives need trend analyses and status reports that accurately portray funding, staffing, and performance progress against mission objectives. Required are accurate, up-to-date information management systems.

The public, too, is pressing for solutions to delays and errors in processing payments and to delays in satisfying information requests. Therefore, federal vendors will need to provide new and innovative products and services to satisfy this perceived federal need.

INPUT expects budget difficulties to continue to constrain the federal information systems market, particularly on the defense side. However, if the procurement process is simplified to reduce the protest volume, acquisitions should begin to increase. Many view information systems as key to productivity increases. Therefore, budget constraints sometimes lead to increased opportunities in the information systems market, as shown in Exhibit III-7.

3. Software Integration and Productivity Improvements

Software is the interface medium between machines, applications, and end users. Agencies need strategies and vendor support to implement the integration of these factors, as shown in Exhibit III-8. Agency respondents in previous studies noted a growing need for portable software that is readily adaptable to a changing hardware environment. As new hardware technologies are put in place, the next generation of software must accommodate change and communications between incompatible equipment. Professional services firms should accommodate this condition by providing the procedures and techniques to foster software integration.

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EXHIBIT III-7

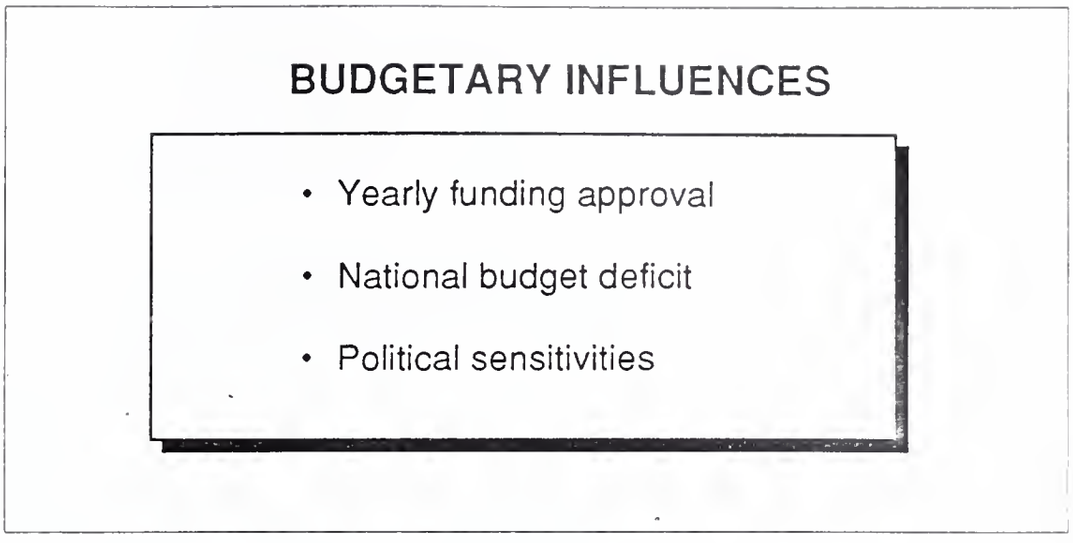
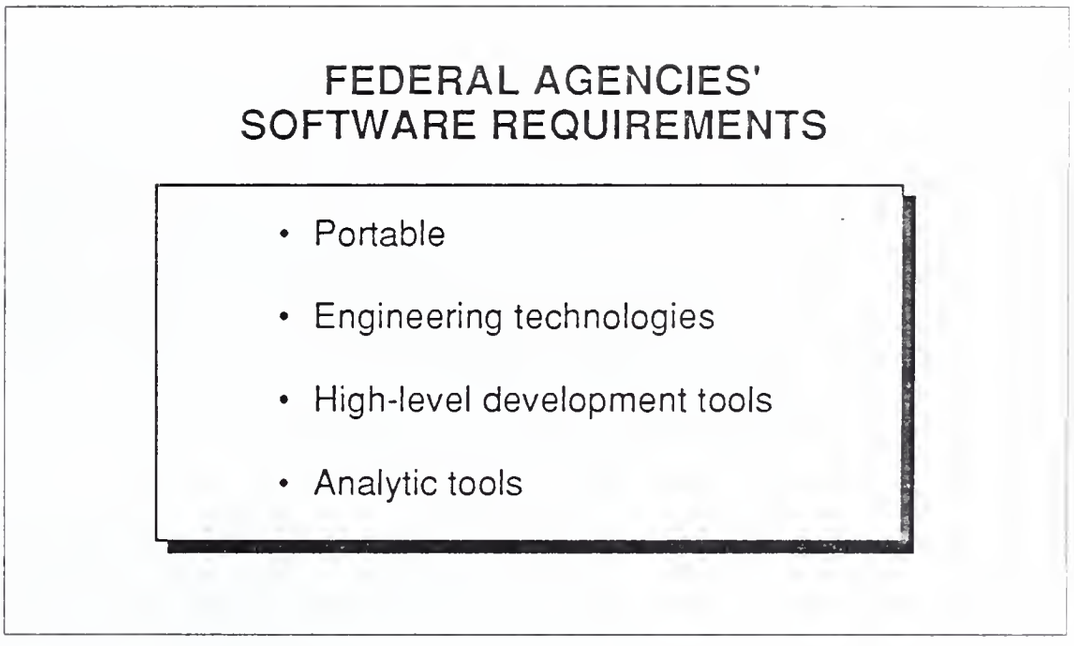


EXHIBIT III-8



Similarly, agencies are increasingly required to merge large applications into a single, transparent software system that fits their end users' needs, rather than government end users adapting their needs to the capabilities of the software.

To modernize software and effect productivity improvement, agency ADP organizations are seeking greater use of:

- Software engineering technologies, including more-efficient software management methods, software development methodologies, and data dictionaries.

- Higher-level development tools, including program generators and fourth-generation languages.

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- Better analytic tools for all sizes of machines—microcomputers, midsize computers, and mainframes—that will provide programmers with development aids such as automatic documentation, cross-referencing, etc. Agencies also require improved system software for supercomputers, and this represents a growing market.

One approach—data administration—provides techniques and software tools to arrange large amounts of data. By organizing, indexing, and cross-referencing data according to the business requirements of the organization, agencies are better equipped to plan procedures for the comprehensive development of future systems. Specifications from the American National Standards Institute (ANSI) are now being reviewed by agencies and vendors. Although a standard data dictionary software specification is some years away, vendors, especially of data base management systems (DBMSs), need to be cognizant of the pending impact of this trend.

Fourth-generation languages (4GLs) are being employed by agencies to increase productivity in software development and maintenance. Currently, 4GLs are used primarily for end-user computing and reports, along with some decision support. Other applications for 4GLs are being designed and will eventually ease the burden on agency staff, and government computer resources experts are concerned with the demand on computing capability of 4GLs and look for 5GLs with improved efficiencies. Many professional services procurements include requirements for 4GL experience.

4. Artificial Intelligence

Artificial intelligence is a market segment in which vendors are focusing on introduction of new technology to the government, primarily in the areas of software development efforts and decision support. Currently, expert systems (which are a popular subset of the family of AI capabilities) are being developed by agencies as standalone end-user production systems to automate knowledge-based processing. In meeting federal professional services needs, vendors must often include AI features as part of their offerings. Exhibit III-9 lists the uses of AI at federal agencies.

The DoD is taking the lead in developing artificial intelligence programs. AI is providing useful training for analysts, and applications are being employed in tactical situations and support functions. Civil agencies are also developing and operating expert systems for large-scale information processing. In a previous report, INPUT reported that decision support systems represent the most common government application of AI.

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EXHIBIT III-9

USES OF ARTIFICIAL INTELLIGENCE IN FEDERAL AGENCIES

- Expert systems for software development and decision support
- Training
- Prototype systems
- Information systems management

Industry views the current AI opportunities to be in product-oriented services for prototyping systems for the federal agencies. As in other software areas, the government is looking to industry for solutions, not just products. Therefore, in response to this trend, AI vendors will migrate beyond standalone systems to new products that integrate approaches and solutions. AI is expected to aid in developing closer links to the main flow of an agency's information processing.

Many small AI vendors are focusing their marketing efforts on IS directors and providing products to facilitate information storage and retrieval, data communication, and other typical management functions. Current federal prototyping efforts are demonstrating AI feasibility in those IS functions as well as other decision support areas. Areas in which federal workers must interview the public seem especially promising for AI. In a previous report, INPUT found that many federal AI applications were being applied to specialized midsize computer systems.

5. Uncertainties and Issues

OMB Circular A-109 and its Defense Department counterpart DD-5000.1 are expected to continue in force for major ADP/telecommunications systems acquisitions for all agencies. The principal effect of the new FIRMR has been an increase of the effective thresholds for application to each agency. This means that agencies can acquire higher-priced systems without obtaining a delegation of procurement authority for GSA. Most IRM respondents believed A-109 would be applied on all systems large

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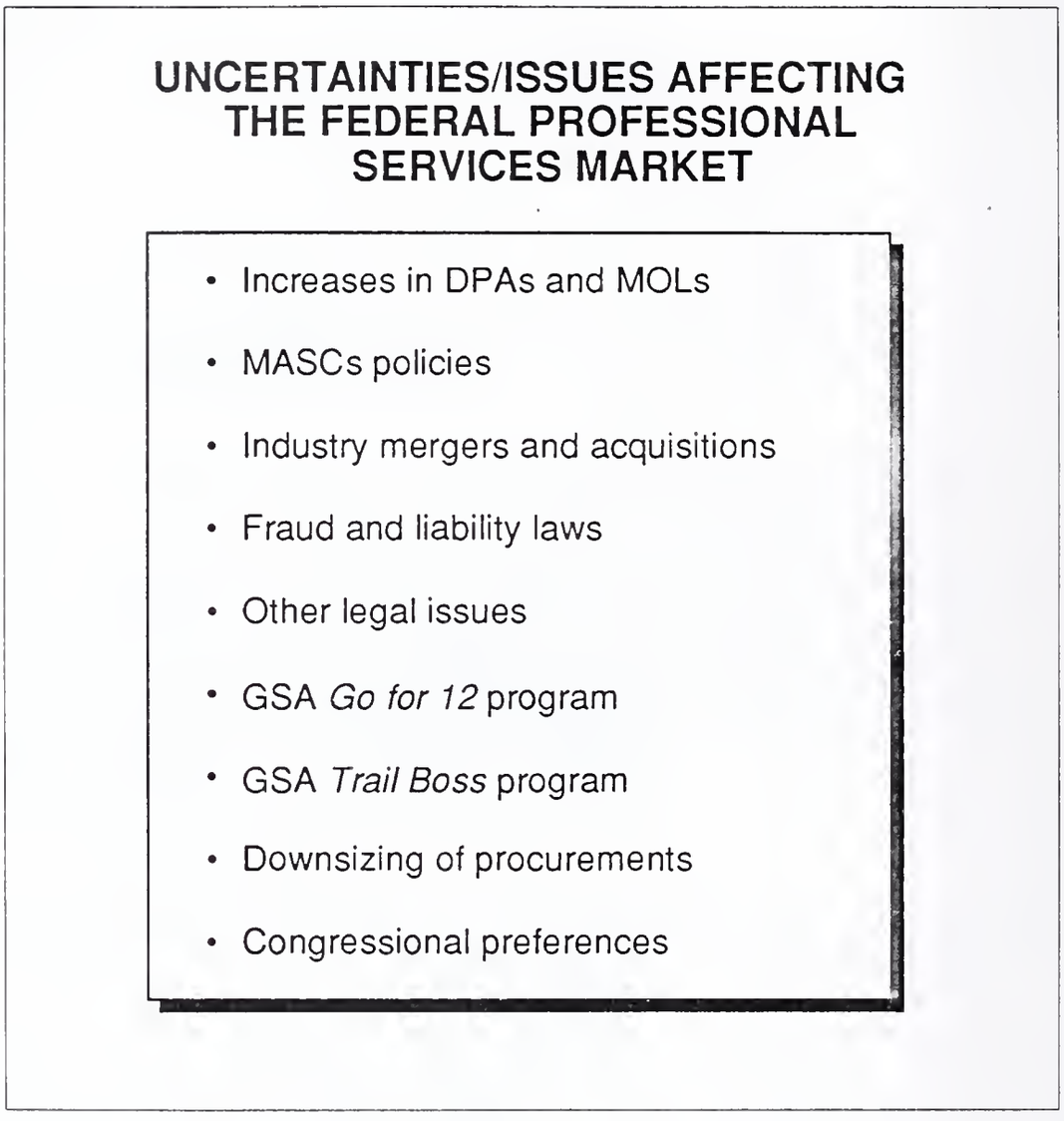
enough to attract congressional attention. However, GSA's efforts to discourage grand designs may all but eliminate A-109-type procurements. Exhibit III-10 summarizes the uncertainties and issues that are affecting the federal professional services market.

EXHIBIT III-10



At this writing, much confusion exists on GSA policies for Multiple Award Schedule Contracts (MASCs), especially as they relate to

- Delegation requirements
- Synopsis requirements
- Maximum Order Limitations (MOLs)

INPUT obtained a copy of the GSA document entitled *Final Report of Government-Wide Task Group on Multiple Award Schedule Contracts*, dated August, 1988. This document is available for client review in the INPUT library.

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The report recommends an increase in the synopsis threshold from $50,000 to $250,000. However, it does not appear that GSA will implement this recommendation, at least in the near future. The report also recommends raising both the Maximum Order Limit (MOL) and the DPA threshold to $600,000.

The wording in the report is a bit ambiguous, but this seems to be its aim. However, at this writing, it appears that the DPA threshold will be raised to $300,000, matching the MOL. INPUT recommends that clients use the hotline service to update the status on these issues when needed.

The merger and acquisition trend in U.S. industry is creating uncertainty in the federal professional services market. Within the past few years, four leading professional services firms (Vanguard Technologies, BDM, ATI, and PRC) have been acquired by other firms. In the case of ATI and PRC, the acquirer itself has been acquired, creating some confusion and morale problems, especially among the senior staff.

Another area of uncertainty arises from new fraud and liability laws, as well as stricter enforcement by the Defense Contract Audit Agency. Congress is showing increasing concern about the so-called "revolving door" concept. Many vendors are being disbarred or temporarily suspended from government business. This is a major problem for midsize professional services firms that are bidding on promising opportunities. Their bid and proposal budget is negotiated on the basis of past contract awards. However, this may constrain further growth by limiting the number of opportunities that can be addressed.

Legal proceedings also add to the uncertainties of the federal market. The current Inslaw, Inc. bankruptcy proceeding, involving nonpayment of software licensing fees by the Justice Department, represents a major concern to software product vendors that support professional services contracts as well as individual package sales. Currently, Inslaw appears to be winning the battle.

A variety of agencies are participating in GSA's *Go for 12* program, with varying results. Each agency will work with GSA in one of three pilot projects designed to model and test different aspects of the acquisition process. The three aspects of the program are the elimination of unnecessary bottlenecks in the acquisition process, the potential for parallel review of acquisitions, and the provision for special training in ADP and telecommunications acquisitions. The results and recommendations will be used to develop new procedures for use throughout the government.

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GSA is currently instituting a *Trail Boss* program, which would provide greater latitude to specific agency officials. However, some agencies oppose this program because of its focus on the individual rather than the agency. Results will also be dispersed governmentwide. GSA has already instituted a far-reaching training program and begun certifying agency Trail Bosses.

Another policy issue evolving in the federal arena is downsizing the grand-design approach to procurements. A 1988 GSA report discussed the feasibility of adopting a modular approach or dividing procurements for systems into smaller pieces. The report's recommendation comes from interviews conducted with individuals involved with ten grand-design systems and outlines these systems' shortfalls and problems. Exhibit III-11 summarizes the report's issues.

The report cites some valid criticisms of the grand-design approach to procurements. However, many of the criticisms can also be applied to the modular approach. Planning, personnel training over time, coordination problems, funding, and interoperability are required for either approach to be successful.

Grand-design and modular projects must in the end be tied together into integrated systems. The real difference between the two approaches appears to be the contract vehicle. The report is still generating industry and government comments on whether the modular approach will work efficiently and what effect, if any, project down-sizing will have on system integration.

One other issue will bear watching in 1989. At this writing Congressman Jack Brooks of Texas has taken over as Chairman of the House Judiciary Committee. He was replaced on the House Government Operations Committee by Congressman John Conyers of Michigan. Although minimal changes have occurred in the first six months, there may be some, as yet unspecified, redirection of policy later on. For example, Representative Conyers may strengthen the preference for small and disadvantaged businesses in IS procurements. While this strengthening would not affect large projects, it may have a significant effect on small professional services opportunities.

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EXHIBIT III-11

TEN ISSUE AREAS THAT HAVE THE MOST EFFECT ON GRAND DESIGNS

1. Coordination problems within the agency during the planning phase
2. Procurement problems during the procurement phase
3. Lack of acquisition skills during the planning and procurement phases
4. Placing the program high enough in the organization in the planning phase
5. Uncertain funding during the planning phase
6. Audits by GAO during planning and procurement phases
7. Problems with contractors during procurement
8. Staffing problems during planning, procurement, and operations
9. Problems with procurement regulations during the procurement phase
10. Unrealistic time schedules during the planning phase

Source: Table 2, Draft Report, *An Evaluation of the 'Grand-Design' Approach to Developing Computer-Based Applications Systems,* GSA, Information Resources Management Service, July 1988

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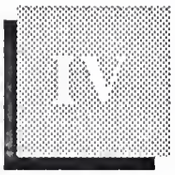

Federal User Requirements and Trends

A Significant Problems/Issues

Federal information system (IS) modernization directives, in combination with automation demands and technology advances, are contributing heavily to the federal government's continuous need to improve the quality and quantity of ADP services. This improvement is occurring within the confines of budget deficit reduction measures. At the same time it is overcoming the handicap of a rapidly aging ADP inventory and escalating software costs. More requirements contracts and greater use of functional specifications are facilitating this transition.

1. Budget and Personnel Constraints

Most federal agencies do not have the staff required to support the quality or quantity of IS-supported services demanded by Congress and the American people. Agency respondents noted that the current federal personnel policies have kept government agencies from hiring and retaining enough qualified IS staff. Hiring ceilings and low salaries were cited as the main reasons leading to the increased attrition rate in the government and the growing use of contractors for professional services. In most metropolitan areas the problem becomes even more acute.

The federal government cannot competitively recruit against the financial rewards offered by the private sector. Furthermore, the personnel policies contain outdated standards and job descriptions, as well as impose severe administrative problems.

Some resolutions to these problems are being developed. Currently, agencies are working with the Office of Personnel Management to upgrade procurement professionals and give greater support for contracting personnel. The Trail Boss Program has also been initiated; this program is expected to improve the training of contract administrators and senior project managers.

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In keeping with administration policies relating to OMB Circular A-76, most commercial-type (as defined by OMB) activities are subject to contracting out. These activities include most activities supporting information systems, with the exceptions of planning, budgeting, and overall program responsibility.

For the past several years, the Gramm-Rudman-Hollings Act imposed cuts in agency expenditures, including IS. These cuts have somewhat limited the growth of the professional services market. However, as indicated in the previous chapter, the federal professional services market will continue to show significant growth. This growth is further shifting the balance between in-house and contracted professional services activities.

2. IS Equipment Inventory Upgrade

Upgrade of the existing inventory of IS will initially result in reduced software maintenance costs. However, this upgrade will not significantly impact overall software expenditures for several years.

- The impact of the IS equipment purchase-versus-lease directives will likely remain mixed for some time. The additional funding that would be directed toward purchase of equipment might slow the upgrading process to new, more modern equipment. It might also increase the amount of maintenance required to keep obsolete equipment (and the software designed to run on that equipment) operational until it is replaced. That portion of maintenance included in FM contracts comprises part of INPUT's professional services delivery mode. However, as discussed in Chapter III, other forces are expected to increase the number of professional services opportunities.

- The GAO has estimated that 70% of life cycle software costs are related to maintenance. As more custom software and complex systems are developed by or for the government, more maintenance labor will be required to keep that software functional, including interim upgrades to expand the applications of the host computers. This may lead to growth in on-site support services among professional services firms. INPUT includes software maintenance in the software development category of professional services.

3. Personal Computers

The rapidly escalating rate of acquisition of personal computers by government personnel has highlighted major problems of accessibility to the government's numerous data bases and created opportunities for professional services contractors.

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- Re-encoding data designed for large systems can require substantial effort, cause delays in data availability, or lead to inaccurate conclusions.

- Implementation of newer technology with more-efficient software imposes an additional technical problem—how to recover information from the tapes of earlier systems, especially when the file codes and procedures are inadequately documented. Numerous professional services firms, often acting through requirements contracts at FEDSIM or the Federal Software Management Center, have successfully assisted agencies in this effort.

- An increasing number of federal end users require training on hardware and PC-based systems, thus increasing education and training opportunities.

- Security risks escalate with proliferation of sensitive data in PCs that are not adequately protected during the absence of the user. Although the impact of these risks may be uncertain at this time, it seems likely that more consulting support will be required to help protect this data.

4. Embedded Computers

Embedded computers are digital computers that are applied in, among other things, real-time military equipment operations to solve tactical, strategic, and operational problems. An embedded computer is capable of accepting information and providing the results of these processes. As embedded computers become more popular in federal applications, professional services opportunities to support them will become more common.

Although INPUT did not include services provided by professional services contractors to support the embedded computer market in the forecast, there are many opportunities for vendors serving these systems. Contract services are required for consulting, training and education, software development, and systems operations.

5. Software and Related Services

OMB is continuing to pressure agencies to contain costs by maintaining existing software and, when that is not possible, to acquire software packages rather than create new custom software. For example, OMB has mandated that financial software packages be acquired, rather than developed, which conform to an interagency standard. Civil agencies have more propensity for packaged software purchases and represent better vendor targets. Commerce was the largest buyer with $24 million requested for 1988. Other large target agencies include NASA, HHS, Treasury, and Transportation.

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Among defense agencies, the Air Force, Navy, and Army all have substantial systems analysis and programming budgets. However, growth in expenditures over the last several years has been slow and will remain so for the forecast period. Slow growth not withstanding, these agencies represent significant opportunities for custom software development, with over $900 million in planned spending in government fiscal year 1989 alone.

B

Budget and Applications

In earlier surveys, most agency respondents indicated that requirements for professional services would increase. Agencies emphasized the need for new and expanded data services that exceed current staff capacity and capabilities. Further, as pointed out above, OMB Circular A-76 was having a strong impact, especially in DoD maintenance expenditures.

Although use of consulting and education/training services will increase, there is considerable pressure to contain expenditure growth. Education/training (along with travel) may be hardest hit by this pressure. In fact, several agencies expressed a belief that the agency would conduct education/training only as required for new systems and only to the extent that the service is offered by the systems supplier. Thus, education/training would be pulled in-house and occasionally limited to on-the-job experience. However, a countertrend is appearing on microcomputers, whose proper use requires special training.

The largest agency users of professional services by the service categories of software development, consulting services, education and training, and systems operations are shown in Exhibits IV-1 through IV-4. INPUT analyzed the OMB Federal Contract Reporting Center data for GFY 1988 to determine the percent of market dollars spent by each agency in each service category.

Of the market dollars spent by all federal agencies for contractor software development assistance, the Navy has purchased the most (24%). This reflects primarily Navy's modernization of logistics and supply systems. GSA's high percentage (13%) reflects the high level of Basic Ordering Agreements (BOAs) for zonal (geographic) support and specialized (FEDSIM and Software Management Center) support. Meanwhile, modernization of Air Traffic Control systems accounts for much of Transportation's total (see Exhibit IV-1).

The heaviest users of consulting services during GFY 1988 were the DoD agencies, which accounted for 75% of the dollars spent in this category. The largest user was the Air Force (42%); the little-known U.S. International Development Cooperation Agency was the largest civil user (8%) (see Exhibit IV-2).

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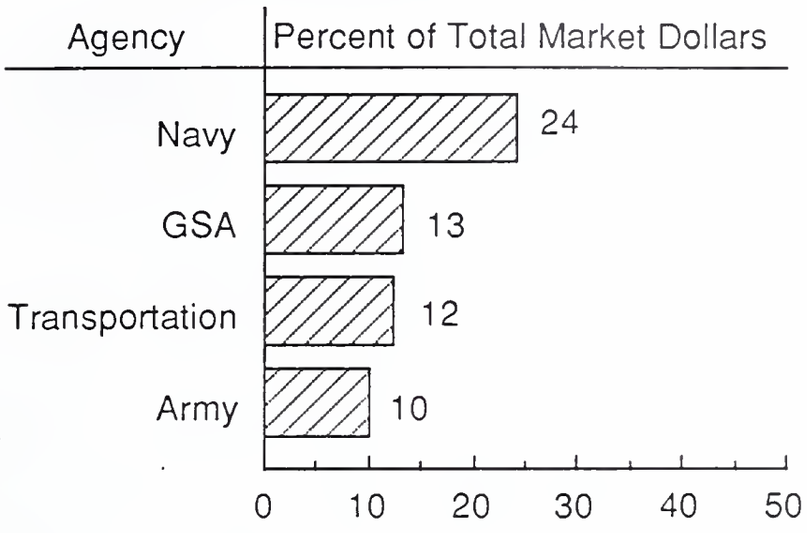
EXHIBIT IV-1

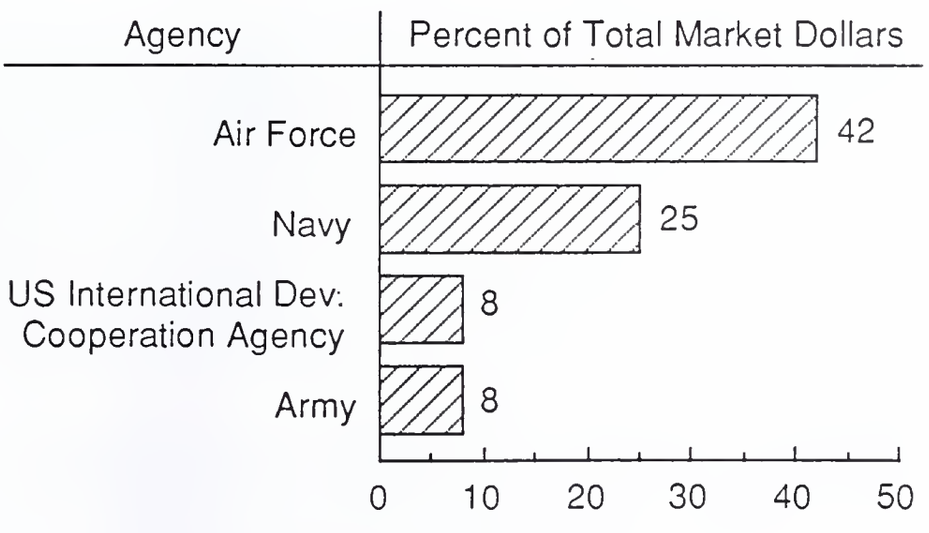
FEDERAL GOVERNMENT PROFESSIONAL SERVICES TOP-FOUR AGENCY USERS, GFY 1988 SERVICE CATEGORY: SOFTWARE DEVELOPMENT



Source: Ziff-Davis Pinpoint, 1989, GFY88

EXHIBIT IV-2

FEDERAL GOVERNMENT PROFESSIONAL SERVICES TOP-FOUR AGENCY USERS, GFY 1988 SERVICE CATEGORY: CONSULTING SERVICES



Source: Ziff-Davis Pinpoint, 1989, GFY88

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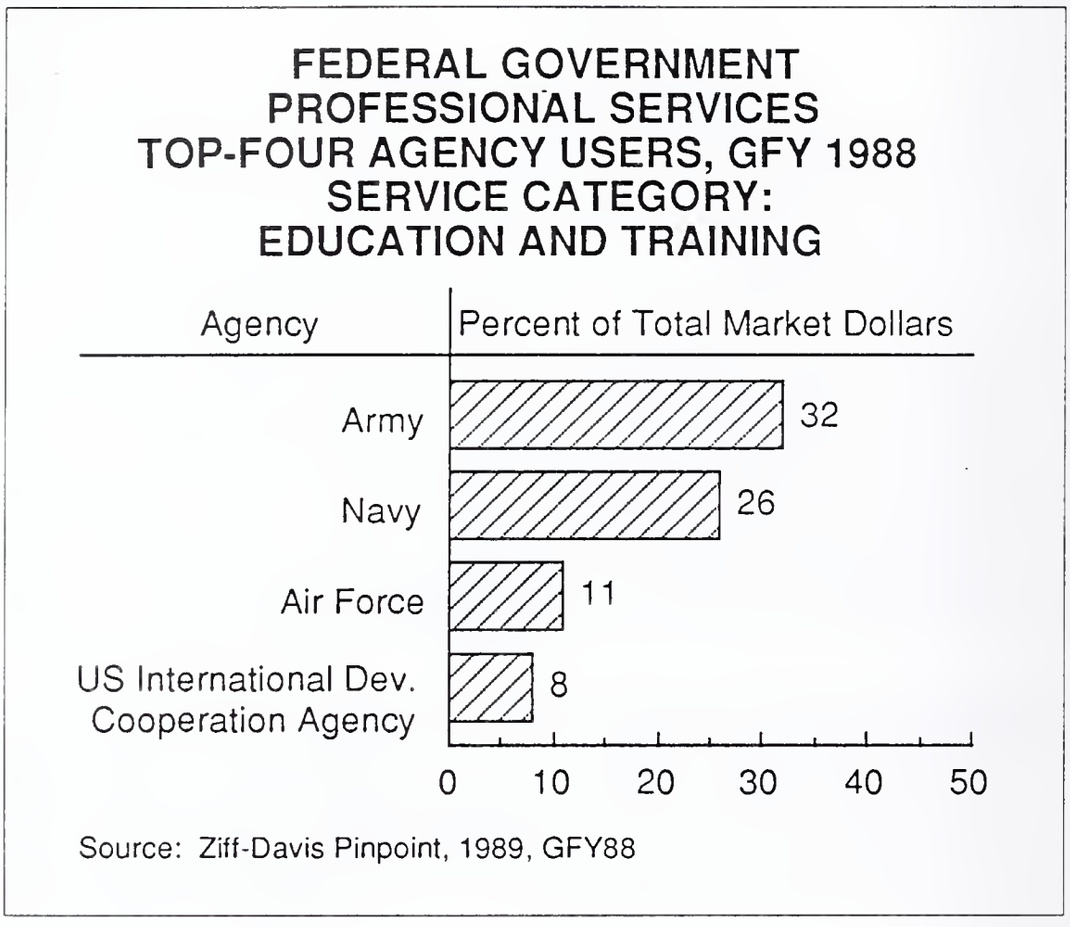
Agency use of education and training services provided by contractors was very similar to that of consulting services. DoD agencies spent close to 70% of the dollars expended on education and training services. Again the U.S. International Development Cooperation Agency was the largest civil procurer of services (see Exhibit IV-3).

EXHIBIT IV-3



Not surprisingly, GSA and NASA were the largest employers of contractors to operate government-owned data centers. Both agencies are known to rely on high levels of outside technical assistance and expertise to operate their computer systems. Only one DoD agency, the Navy (12%) spent significant dollars on outside contractor assistance to operate their computer operations. New initiatives to bring functions in-house at several Navy agencies may change this in the future. The Department of Justice also spent a considerable amount on systems operations assistance since most of its computer centers are operated by contractor personnel (see Exhibit IV-4).

Vendors specializing in offering specific types of professional services need to market to those agencies that are the largest users of contractor assistance in those areas. However, continued popularity of A-76 principles may open up more agencies to contractor support.

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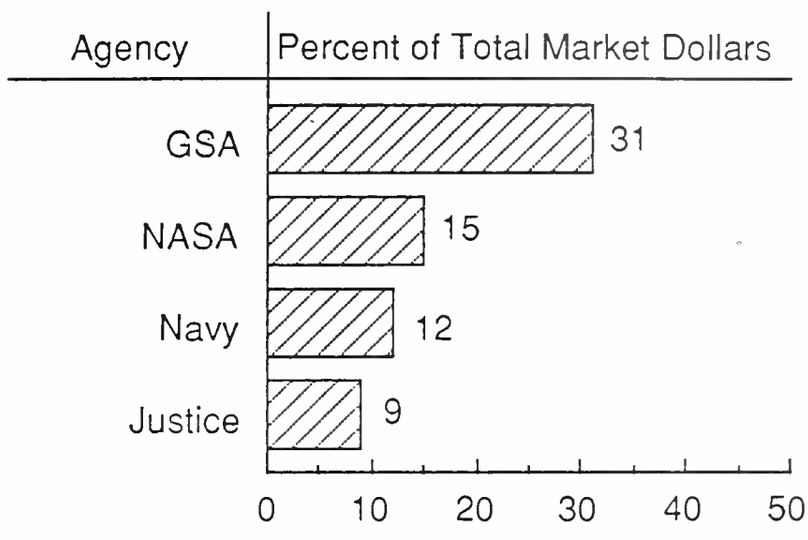
EXHIBIT IV-4



Source: Ziff-Davis Pinpoint, 1989, GFY88

1. Professional Services Budget Distribution

INPUT's analysis revealed that there were significant differences but also some similarities in the distribution of the professional services budgets of the DoD and of the civil agencies, as shown in Exhibits IV-5 and IV-6.

Consulting expenditures were the highest percentage of the budget for both DoD and civil agencies. However, the budget dollars for DoD agencies was almost 30% higher than for civil agencies. This reflects, among other things, the need for more studies in DoD to conform to life cycle management directives.

- Budget allotment distributions for education/training were similar for both types of agencies and represented approximately 14% of the professional services budgets.

- Systems operations services in civil agencies reflect the continuing need to cover the larger staffing shortfalls in personnel. Similarly contracted software development activities represented a larger proportion of the civil agencies' professional services budgets.

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EXHIBIT IV-5

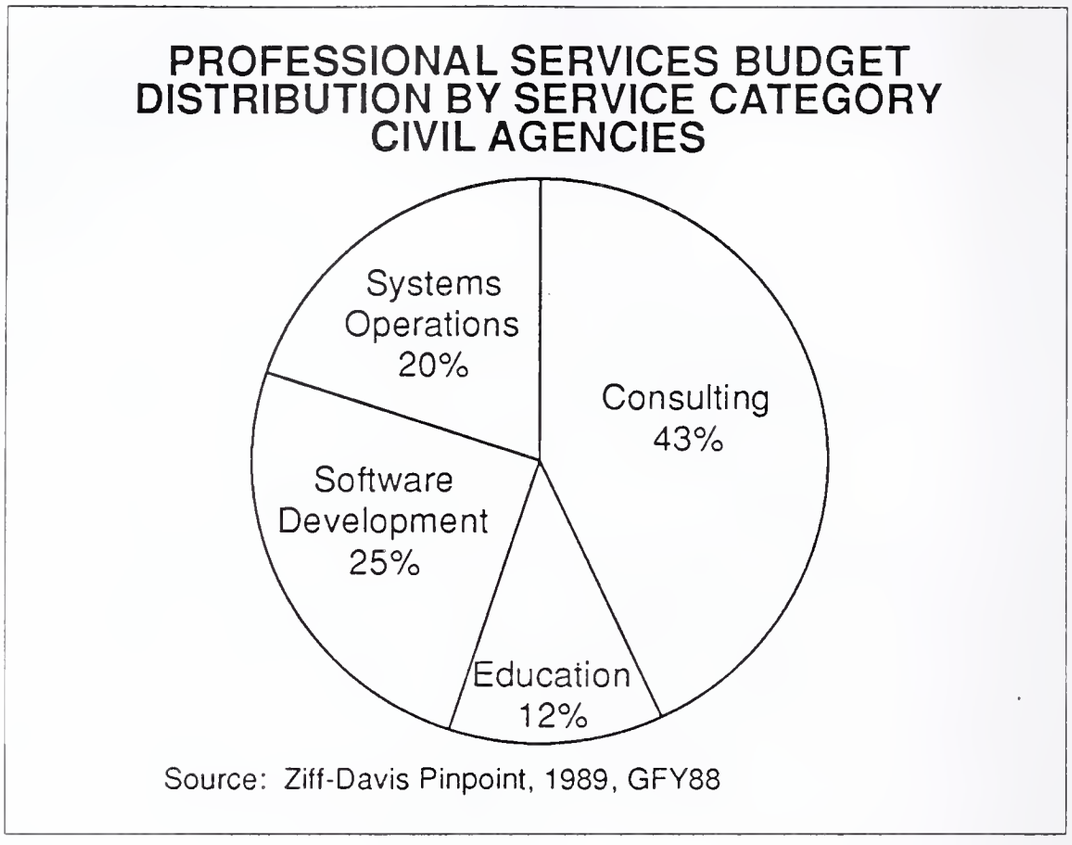
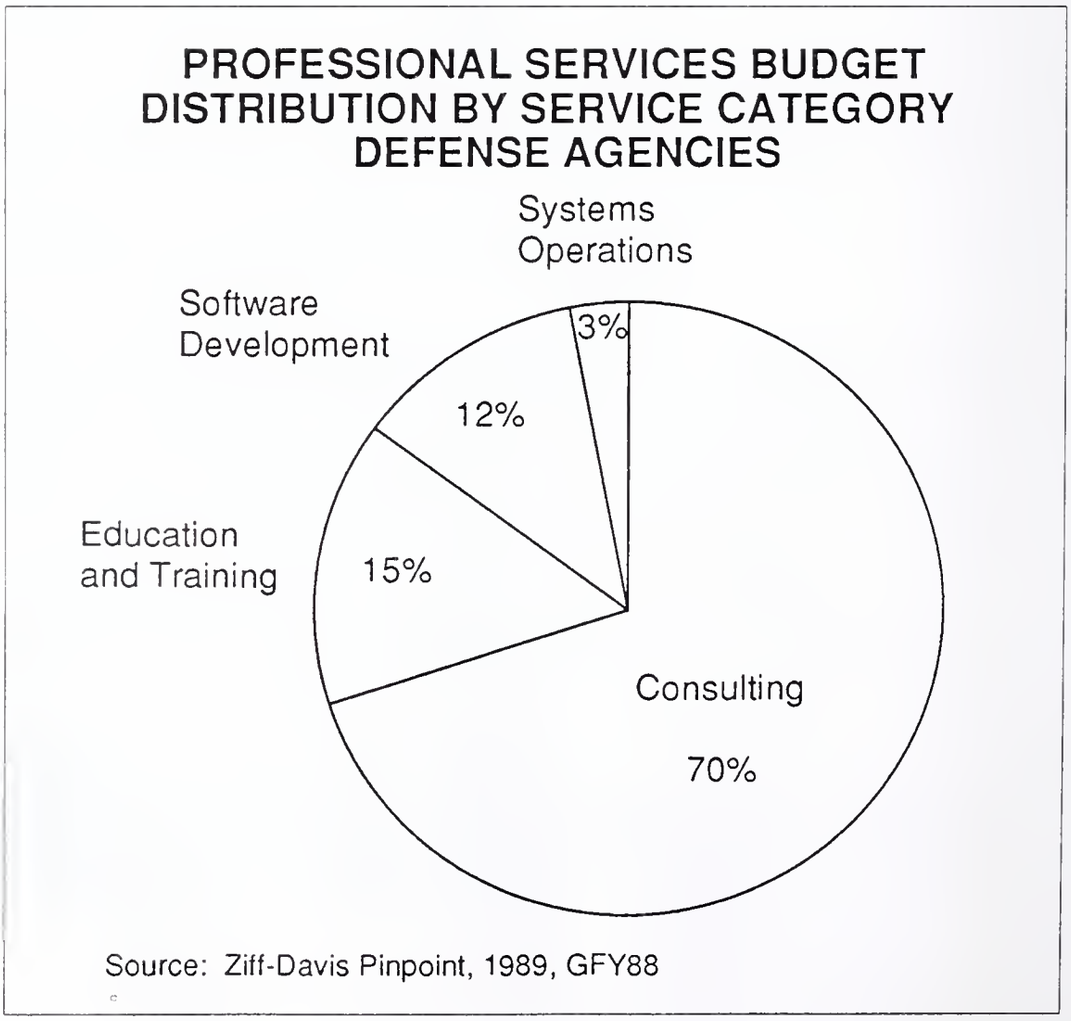


EXHIBIT IV-6



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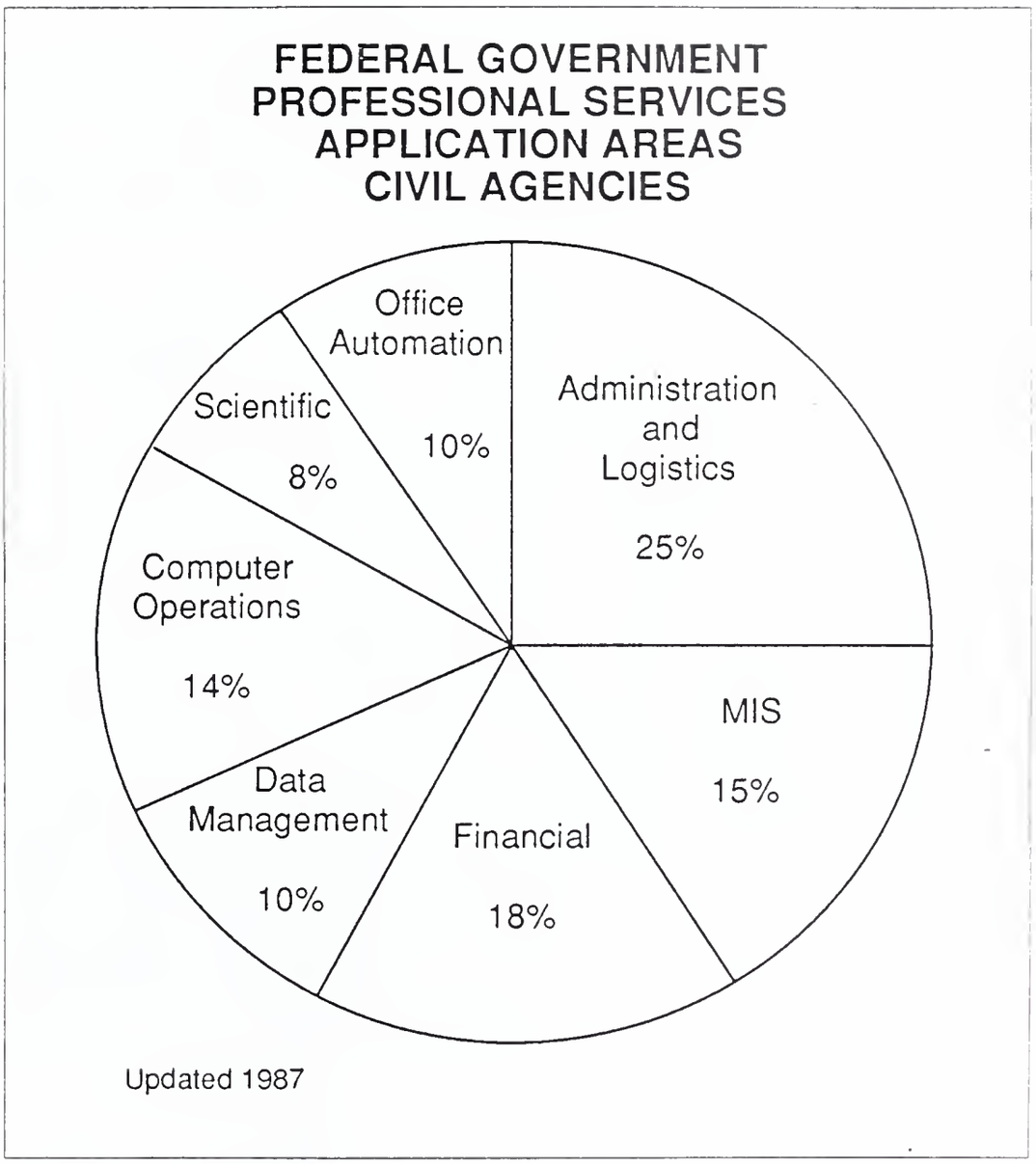
2. Application Areas

As might be expected, agencies used professional services contracts for a wide range of applications. In an earlier version of this report, INPUT surveyed agencies on their application plans for professional services contracts. Exhibits IV-7 and IV-8 summarize this data for civil and defense agencies.

EXHIBIT IV-7



The data has been normalized somewhat to allow for a comparison of categories. While most of the categories are obvious, some require explanation:

- Administration and logistics include the housekeeping functions required to operate federal agencies, such as personnel, procurement, and supplies.

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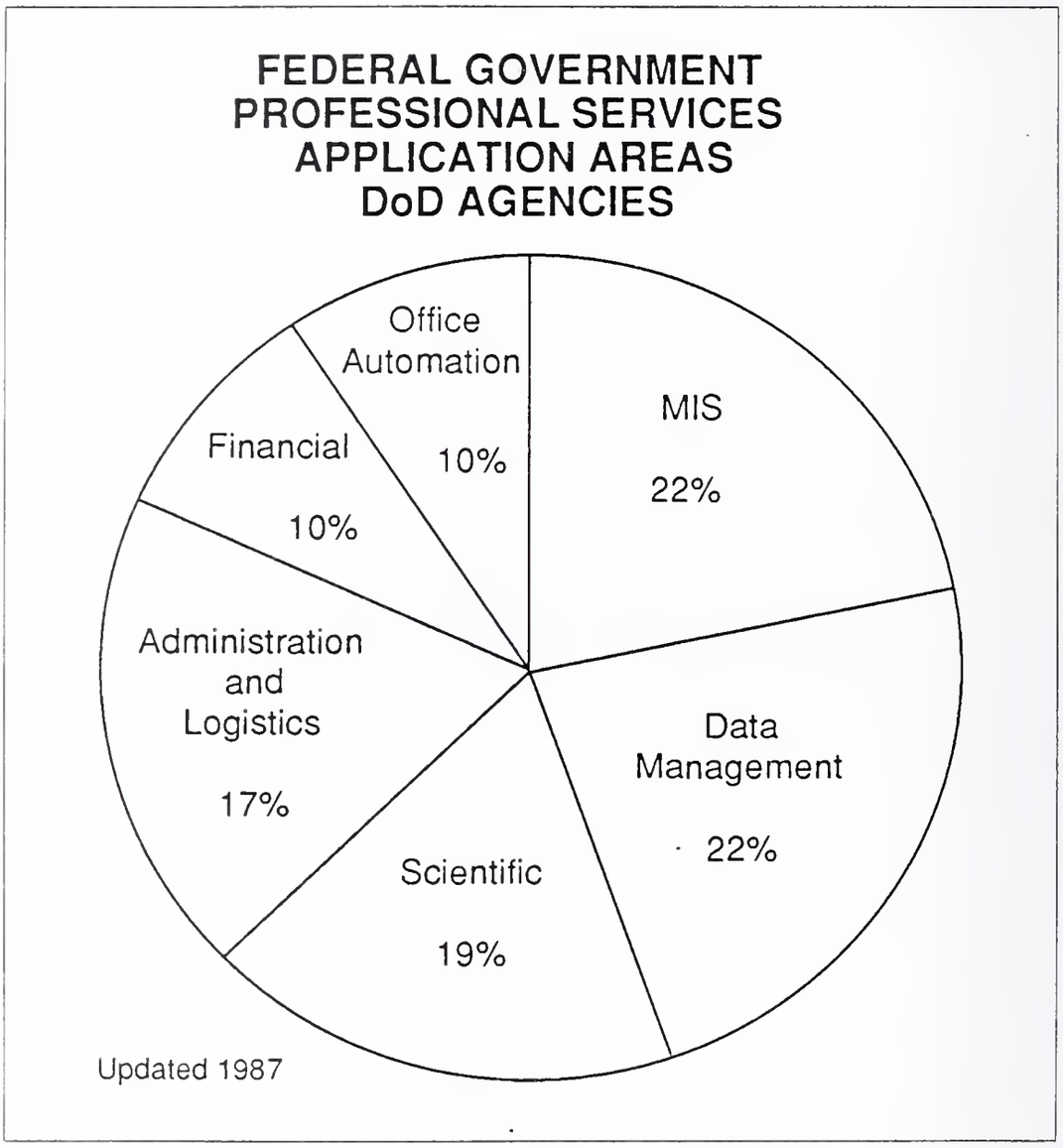
- MIS includes support for the IRM organizations in such typical areas as technical consulting, software development, and performance measurement.

- Data management includes the control and dissemination of data to federal agencies, such as provision of data base services and the structuring of data bases in support of specific applications.

EXHIBIT IV-8



In both DoD and civil agencies, the predominant applications for which professional services were contracted were those associated with general data processing in support of management/administrative requirements. Financial applications and logistics made up the largest specific applications. Other applications covered a range of information systems and appeared unique to the individual needs of each agency. Mentioned

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systems did frequently include such tactical directions as LANs, distributed processing, and centralized data bases. While still a less-frequent target, office automation continues to be an application for which agencies buy professional services. Applications tend not be esoteric in nature, but rather "plain vanilla" systems that serve as the backbone of each agency.

While scientific applications made up a relatively small portion of the civil area, they represented nearly one-fifth of the defense applications. This small proportion in civil agencies is somewhat surprising, in view of the scientific emphasis of some civil agencies, such as Commerce, NASA, and Energy. A follow-up with agency respondents indicated that both Commerce and Energy tended to use more in-house employees for scientific work, leaving only NASA to focus on contractors.

INPUT's subsequent surveys suggested that many agencies have increased their interest in mission-oriented applications that require custom software development. These applications reflect the business of the agencies, such as a tax audit system at IRS, a patient eligibility system at VA, or a polluted site tracking system at EPA. In some cases, agencies had become subject to administrative pressures to use commercial software packages when possible to support these applications. However, due to the specialized nature of so many of these applications, many agencies were still seeking custom software to satisfy their needs.

INPUT believes that continuing budget constraints, as well as a greater variety and functionality of available packages, will ultimately lead to an increase in the acquisition of packaged systems. Further, the agencies' ADP work force will continue to require education and training as changes in end-user computing and new software systems are introduced into their computer operations. Exhibit IV-9 ranks the types of education and training requirements that would affect future spending for government services, based on an earlier INPUT study. System users training, and operations and applications software training, were the two highest-rated factors by both groups of respondents. Similar to the applications themselves, requirements are for more, not more-advanced, topics.

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EXHIBIT IV-9

EDUCATION AND TRAINING REQUIREMENTS

Factor	Civil Agency Rank*	DoD Agency Rank*
Training for system users	1	2
Training for operations and applications software	2	1
Training for data base management	3	4
Training for fourth-generation languages	4	5
Training for programmers	5	3

* Rank based on frequency of mention by respondents.

Updated 1987

Education requirements have increased over the last five years in 80% or more of the agencies, as shown in Exhibit IV-10. Approximately 70% of the agencies foresaw that their education and training requirements will increase over the next five years. However, budget constraints play an important role here, since training (along with travel) is usually the first thing to be cut during a budget crunch. Therefore, although the Exhibit may accurately reflect future training requirements, it may not reflect future actual spending on training. In fact, as shown in Chapter III, education and training lags behind most other professional services components in growth.

C

Agency Perceptions of Professional Services

1. Advantages/Benefits of Professional Services

Civil and DoD agencies used professional services contracts primarily because contractors provided experience and expertise that were not available extensively within the agency, as shown in Exhibit IV-11. This data is based primarily on findings from earlier surveys. The totals add to more than 100% due to multiple responses.

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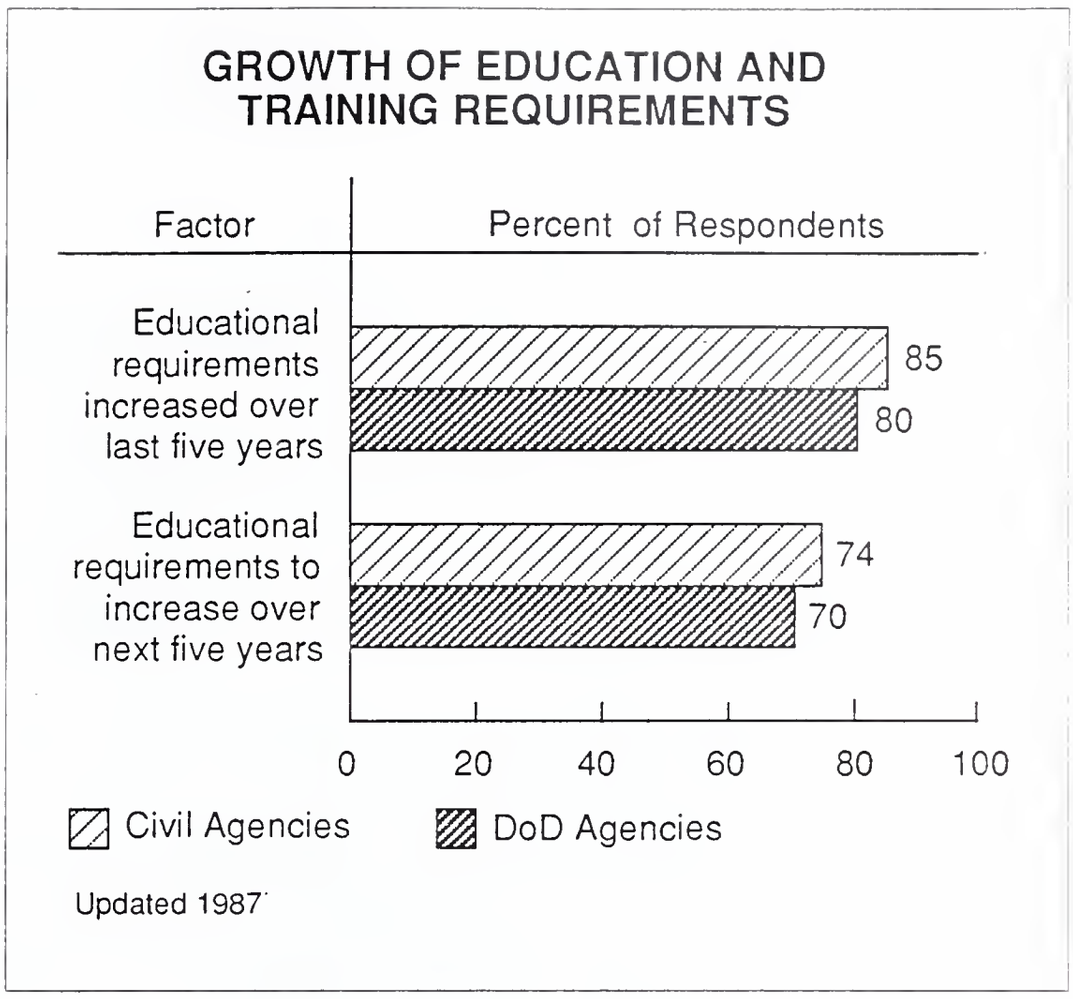
EXHIBIT IV-10



Professional services contracts were also used because they give the agency the ability to balance workloads without increasing or decreasing government staff as requirements are added and/or removed. Some government respondents believed that contractor labor is less expensive than performing the same task with government employees; in addition, fixed-price contracting enables the government to put a ceiling on the overall cost. This ceiling in particular was considered an advantage by DoD respondents.

Objectivity, which includes the ability of the contractor to take an unbiased approach to a problem without being affected by internal agency politics, is essential. The civil agencies considered expediency advantageous. Expediency can be measured in terms of accelerated schedules, as well as in terms of fewer problems with government rules, regulations, and policies than if the work were performed in-house. DoD agencies tend to take a more deliberate approach to problem solving.

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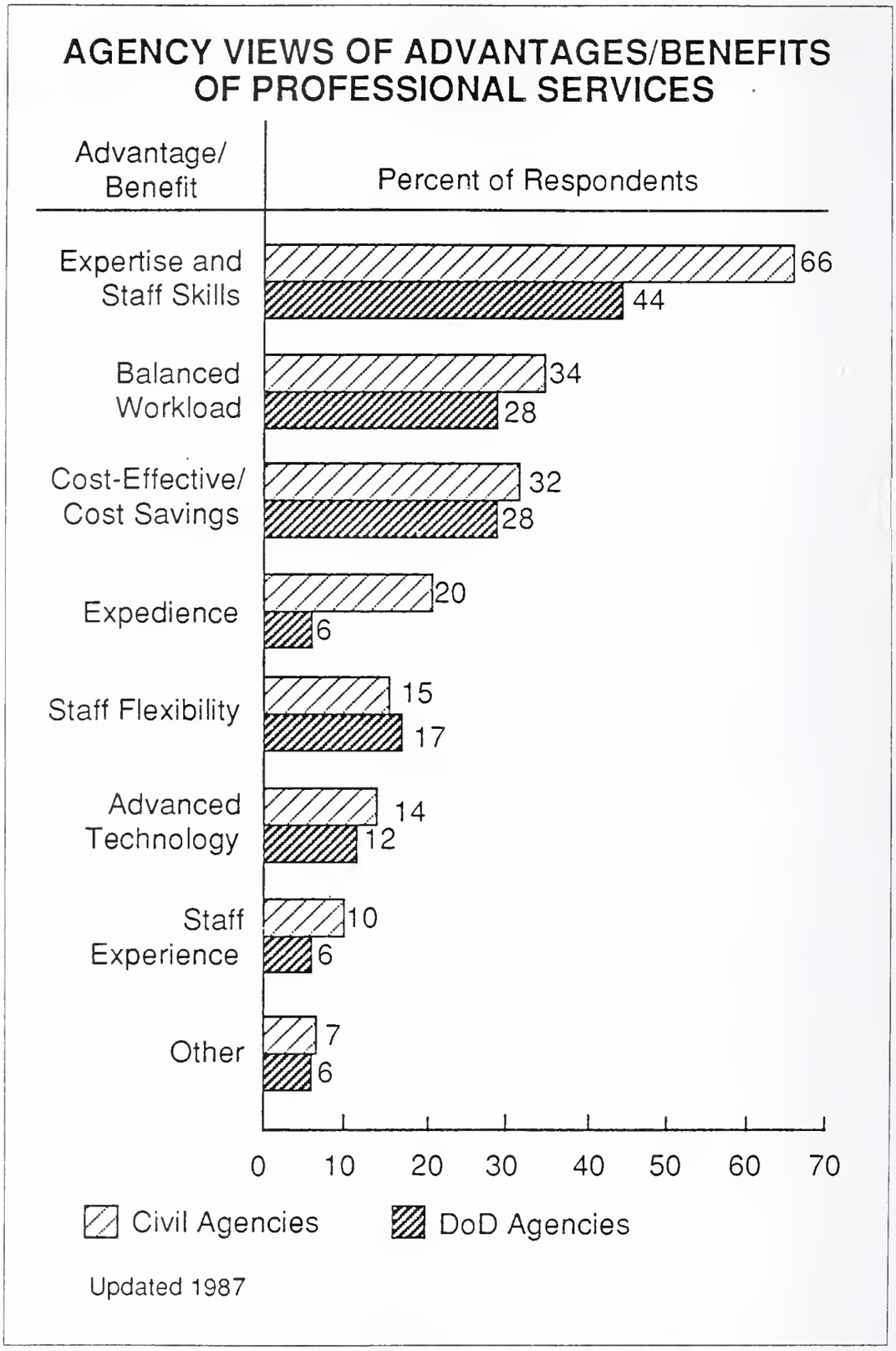
EXHIBIT IV-11



2. Disadvantages/Liabilities of Professional Services

The difficulty in managing contracts for professional services was the number-one disadvantage described by both the civil agencies and DoD, as shown in Exhibit IV-12. This factor was by far the major liability

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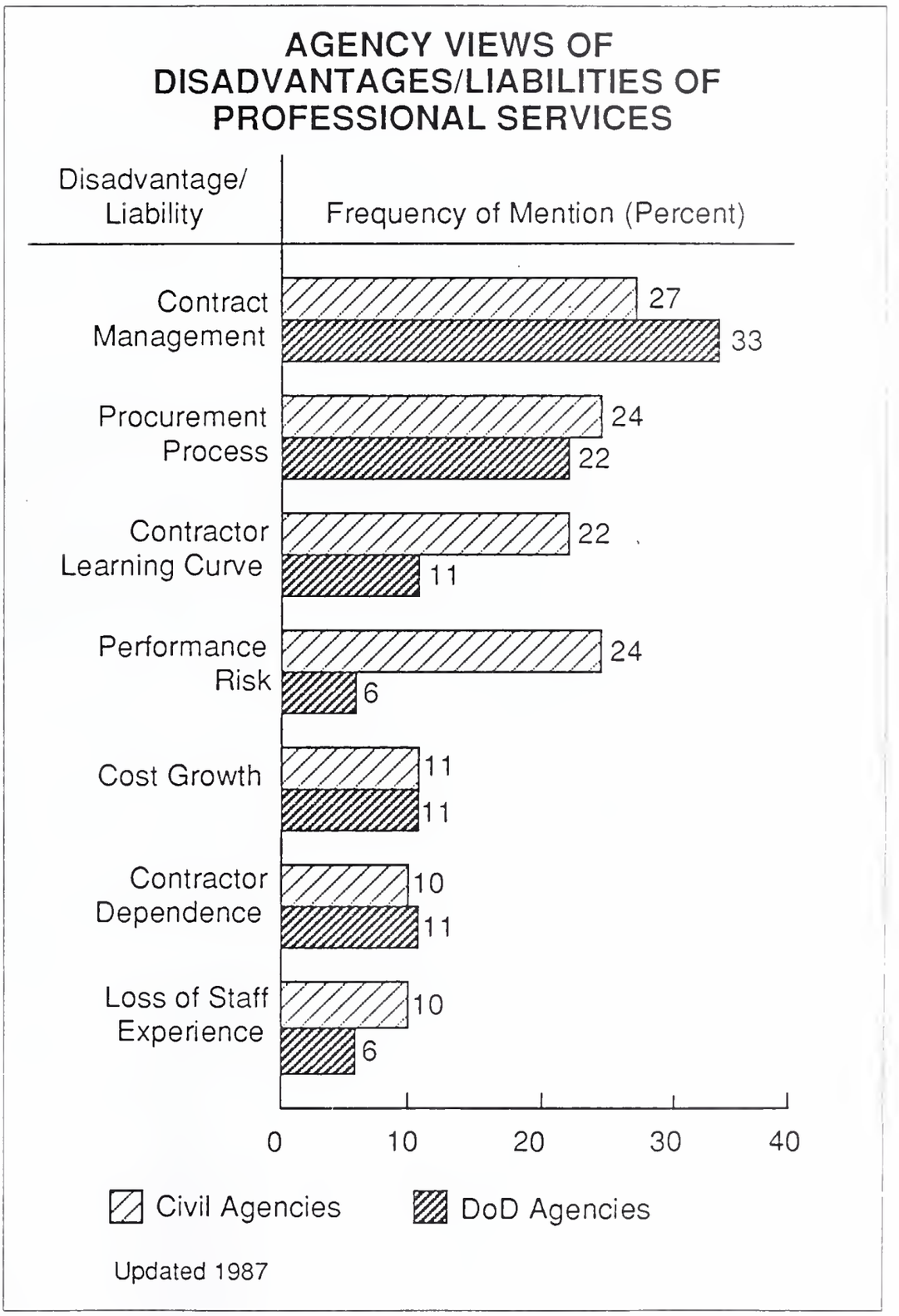
according to DoD respondents. Performance risk, or the concern on the part of government agencies that the contractor could not deliver or could deliver an unacceptable product, was considered a significant liability by civil agencies. Adherence to the schedule was also a factor here.

EXHIBIT IV-12



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The problems associated with procurement, including the long lead time required for contracting and the risk of protest by losing bidders, were considered a disadvantage by the agencies. The learning curve, or the time it takes contractors to "come up to speed" on the problem, was considered a disadvantage by 22% of the civil agencies and by 11% of the DoD respondents. This is especially important on low-priced "body shop" contracts, where turnover runs especially high.

Although, as described in the previous section of this report, the agencies could not accomplish all of their assigned work without contractor support, it is considered by some to be a disadvantage to become dependent on a contractor. The consensus of those who considered this dependence a disadvantage was that contracting for professional services weakened the agency's ability to do further work because the contractor ended up with most of the expertise in this area. This also helps the contractor perpetuate itself with the client.

D

Case Studies of Professional Services Contracts

This section presents fourteen case studies of professional services projects that have either been completed or are well into the contract life cycle. The data was provided primarily by prime contractors and some agency project managers. The case studies illustrate how contractors attempt to manage complex systems needs by providing consulting services, software development, education and training, and systems operations functions. Summary contract data is also shown (when available) to depict how varying project requirements can affect contract type.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Workload Control System Redesign**

Department: **U.S. Navy**

Branch: **Naval Air Systems Command**

Mission Problem/ Function

Complete redesign of the Workload Control System's (WCS) software was required to improve efficiency at six Naval Air Rework facilities.

Major Tasks Performed

- Continuing analysis of evolving systems design
- Programming of depot software modules

Contract Information

Type	Amount	Duration
CPFF	$27 million	1 year with 2 option years

Schedule

RFP Release	Bid Due	Award	Completion
Unk		8/86	8/89

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Contractor(s)

	Company	Function
Prime Contractor	CDSI	Software development

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Software Development	P

Project Components Detail

Software Development

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Depot	P
Personnel	P
Inventory	P

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User requirement definition	P
Systems design	P
Contract programming	P
Software documentation	P
Maintenance Support	P

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Education and Training

Contractor Responsibility:	P

Education and Training Services
Developed training programs

Original Funding

Not available

Project Scope

Physical requirements are continually evolving in the dynamic environment

Project Status

The contract's option years will end in 8/89.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Water Operations and Record Keeping System (WORKS)**

Department: **U.S. Department of the Interior**

Branch: **Bureau of Reclamation, Mid-Pacific Region**

Mission Problem/ Function

In response to the Reclamation Reform Act, the WORKS data base, running under TOTAL, needed extensive enhancements; a conversion to another DBMS was anticipated.

Major Tasks Performed

- Designed new WORKS data base using INGRES by RTI
- Converted code from TOTAL to INGRES
- Trained agency personnel in applications use
- Developed new systems documentation

Contract Information

Type	Amount	Duration
FFP (SBA-8(a))	$4 million	1 year with 4 option years

Schedule

RFP Release	Bid Due	Start	Completion
N/A	N/A	10/1/87	Renegotiated annually

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Contractor(s)

	Company	Function
Prime Contractor	COMSIS	DP Services

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P
Software Development	P
Systems Operations	P
Education/Training	P

Project Components Detail

Consulting Services

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	P
Services Management Consulting	P
Technical Project Assistance	P
Management Project Assistance	P
Feasibility Analysis	P
Cost-Effectiveness Trade-Off Studies	P

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Software Development

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
dBase	P
INGRES	P
Systems Management	P
Communications Software Development	P

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P
Systems Design	P
Contract Programming	P
Software Documentation	P

Education and Training

Contractor Responsibility	P

Education and Training Services
Vendor instruction of user personnel in use of applications

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Original Funding	$850,000 per year
Project Scope	Changes to the original SOW of the contract award were made. Additional requirements were negotiated between the contractor and the agency.
Project Status	All tasks are being performed. Contractor also recruited and retrained some very high quality personnel.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Systems Engineering and Analysis Support Services**

Department: **NASA, Goddard Space Flight Center**

Branch: **Mission Operations and Data Systems Directorate**

Mission Problem/ Function

Provide engineering and development of ground systems to perform tracking, communications, data processing, and control for NASA's space missions.

Major Tasks Performed

- Major upgrade of the TDRS Network Control Center
- Enhanced the Spacelab Data Processing System
- Completed development of the flight dynamics, ground control center, command management, and data processing systems for the Cosmic Background Explorer mission
- Delivered a major communications system and a major space network control system to support the classified launch of STS-27

Contract Information

Type	Amount	Duration
CPAF	$185 million base	2 years + 10.5 months, with 7 option years

Schedule

RFP Release	Bid Due	Start	Completion
10/1/86	12/1/86	11/15/87	9/30/97

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Contractor(s)

	Company	Function
Prime Contractor	CSC	Systems engineering and development
Subcontractor	Ford Aerospace	Systems engineering and hardware fabrication
Subcontractor	Bendix	Various
Subcontractor	CRMI	Various
Subcontractor	CTA	Various
Subcontractor	ISI	Various
Subcontractor	Lincom	Various
Subcontractor	NYMA	Various
Subcontractor	STI	Various

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P,S
Software Development	P,S
Education/training	P,S

Project Components Detail

Consulting Services
$61 million (base)

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	P
Services Management Consulting	P
Technical Project Assistance	P,S
Management Project Assistance	P,S
Feasibility Analysis	P,S
Cost-Effectiveness Trade-Off Studies	P,S

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Software Development
$91 million (base)

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Communications	P,S
Network Control	P
Spacecraft Control	P,S
Data Processing	P,S

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P,S
Systems Design	P,S
Contract Programming	P,S
Software Documentation	P,S

Education and Training
$17 million (base)

Contractor Responsibility	P

Education and Training Services
Contractor instruction of user personnel in operations
Contractor instruction of user personnel for maintenance
Other documentation services

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Additional Services
$17 million (base)

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Hardware fabrication	S
Hardware/software integration	P
Research and development	P

Original Funding

$2.2 million (incremental funding)

Project Scope

Agency exercised option in contract to increase personnel by up to 30%

Project Status

300 tasks are ongoing. A major communications system and a network control system have been delivered. Two major data processing systems are currently in the development phase. This contract's value has been estimated at $1.0 billion if all option years are exercised.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **NASA Requirements and Design Support (RADS)**

Department: **NASA**

Branch: **Headquarters**

Mission Problem/ Function

Technical support was required for NASA's Automated Information Management Program in the areas of systems planning, requirements analysis, development, and implementation.

Major Tasks Performed

- Conducted system feasibility studies for accounting, personnel/payroll, occupational health, environmental management
- Provided system strategies planning
- Computer security
- Program development
- Information Resources Management program support
- System prototyping
- System development
- Performance analysis
- Capacity planning

Contract Information

Type	Amount	Duration
CPAF	$21 million	5 years

Schedule

RFP Release	Bid Due	Award	Completion
1/85	3/85	10/85	9/91

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Contractor(s)

	Company	Function
Prime Contractor	Booz-Allen and Hamilton	Planning, analysis, design development
Subcontractor	Boeing Computer Services	Software development
Subcontractor	TAI	Systems analysis
Subcontractor	CRC Systems	Software development

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P
Software Development	P,S

Project Components Detail

Consulting Services
$9,500,000

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
System Management Consulting	P
Technical Project Assistance	P,S
Management Project Assistance	P
Feasibility Analysis	P,S
Cost-Effectiveness Trade-off Studies	P

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Software Development $6,000,000

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
MVS Applications	P,S
PC-based Applications	P

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P,S
Systems Design	P
Contract Programming	P,S
Software Documentation	P,S

Additional Services $600,000

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Technology Procurement Support	P
Capacity Planning	P

Original Funding $200,000

Project Scope Has not changed since contract award

Project Status Contract will be completed in two years. The contractor believes it is quite successfully fulfilling the contract's requirements.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program/Project Name:	**Systems Engineering/Technical Assistance (SETA)**
Department:	**Defense Logistics Agency**
Branch:	**Office of Telecommunications and Information Systems**

Mission Problem/ Function

Provide a broad range of SETA support to the Defense Logistics Agency

Major Tasks Performed

- Supported all hardware and software acquisitions activities for DLA's Defense Logistics Services Center (DLSC)
- Provided system development functions for the Defense Technical Information Center (DTIC)

Contract Information

Type	Amount	Duration
FFP	$125 million	5 years + extension

Schedule

RFP Release	Bid Due	Award	Completion
		4/83	4/89

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Contractor(s)

	Company	Function
Prime Contractor Subcontractor	Advanced Technology Inc. Peat, Marwick & Main	Consulting, software development Management studies

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P,S
Software Development	P
Education/Training	P

Project Components Detail

Consulting Services

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	P
Services Management Consulting	P
Technical Project Assistance	P
Management Project Assistance	P,S
Feasibility Analysis	P
Cost-Effectiveness Trade-Off Studies	P

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Software Development

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Financial	P
Data Base	P

Software Developement Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P
Systems Design	P
Contract Programming	P
Software Documentation	P

Education and Training

Contractor Responsibility	P

Education and Training Services
Vendor instruction of user personnel in operations
Vendor instruction of user personnel in programming
Vendor instruction of user personnel for maintenance
Other documentation services

Original Funding

$25 million

Project Scope

Has not changed since contract award

Project Status

Contract is in sixth and final year. It is highly probable that this contract will be recompeted to continue to provide a wide range of necessary SETA support to the DLA.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Information Systems Modernization Program**

Department: **U.S. Army**

Branch: **Corps of Engineers**

Mission Problem/ Function

Modernize the Corps of Engineers automated business applications to achieve paperwork reduction, standardization of data, and consistency in data distribution

Major Tasks Performed

- Studies and analyses
- Technical and system development support
- Host processing and communications
- Training and equipment

Contract Information

Type	Amount	Duration
BOA	$15 million to date	N/A

Schedule

RFP Release	Bid Due	Award	Completion
N/A		1987	1992

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Contractor(s)

	Company	Function
Prime Contractor	McDonnell Douglas	Technical Assistance
Subcontractor	Not available	
Outside Consultant	Not available	

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P,S,O
Software Development	P,S,O
Education/Training	P,S,O

Project Components Detail

Consulting Services

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	P,S,O
Services Management Consulting	P,S,O
Technical Project Assistance	P,S,O
Management Project Assistance	P,S,O
Feasibility Analysis	S

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Software Development

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Business Applications	S

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P,S
Systems Design	S
Contract Programming	S,O
Software Documentation	S

Education and Training

Contractor Responsibility	S

Education and Training Services
Vendor instruction of user personnel in programming

Original Funding

N/A

Project Scope

As new requirements evolve, appropriate contracts or purchase orders are issued.

Project Status

The contractor is continuing to perform consulting, software development, and training services to the Corps of Engineers.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Naval Aviation Logistics Command Management Information System (NALCOMIS)**

Department: **U.S. Navy**

Branch: **Naval Air Systems Command/Navy Management System Support Office**

Mission Problem/ Function

NALCOMIS was implemented to provide integrated, on-line, real-time systems to support the objectives and functions of the Navy's Naval Aviation Maintenance Program (NAMP). The system was needed to automate the processes of maintenance and material requirements (supply) support for the Navy's Intermediate and Organizational Maintenance Activities (IMA/OMA) in an interactive network data base environment. Overall objectives of NALCOMIS were:

1) improve readiness of Naval aircraft;
2) improve operational efficiencies of the maintenance and supply activities resulting in lower personnel, inventory, and processing requirements;
3) improve the integrity, timeliness, and availability of data;
4) improve upline and management reporting to Navy and Defense commands.

Major Tasks Performed

- Systems integration, installation, and support services to implement NALCOMIS requiring over 3,000 programs, 300 on-line conversions, and 3 million lines of code
- Requirements analysis
- Technical architecture design
- Program design
- Programming and unit testing
- Systems and integration testing
- Conversion planning and conversion
- User and instructor training
- Development functons
- Life cycle support activites

Contract Information

Type	Amount	Duration
CPAF	$33,937,000	4 years

Schedule

RFP Release	Bid Due	Award	Completion
	10/84	1/85	1/89

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Contractor(s)

	Company	Function
Prime Contractor	Andersen Consulting	Systems design, implementation, life cycle support
Subcontractor	Honeywell Info. System	Hardware support, development
Subcontractor	Tidewater Consulting	Development

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Software Development	P,S
Education/training	P

Project Components Detail

Software Development $33,316,000

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Intermediate Maintenance Activity	P
Organizational Maintenance Activity	P

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P
Systems Design	P
Contract Programming	P,S
Software Documentation	P,S
Technical Support	P,S

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Education and Training
$621,000

Contractor Responsibility	P

Education and Training Services
Computer-Based Education (CBE) Vendor instruction of user personnel in operations Other documentation services Instructor training development

Original Funding

$6,787,400 (approximately 20% of contract value)

Project Scope

Systems development and support services were expanded and additionally contracted for after the original contract award.

Project Status

Project was completed as of 1/31/89. The certification and implementation of NALCOMIS at Navy and Marine Air bases met a very important, long-term objective of the Navy's Aviation program.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Marine Corps Standard Supply System (M3S)**

Department: **U.S. Marine Corps**

Branch: **Marine Corps Logistics Base**

Mission Problem/ Function

Determine user requirements, produce a structured design, programming, and provide life cycle documentation for the M3S inventory management applications covering computation of stock levels, review and approval of replenishment actions, and managing/reporting stock excess.

Major Tasks Performed

- Analyzed user requirements
- Resolved policy issues
- Developed structured detailed design of the inventory management applicaton
- Developed new systems documentation
- Developed training programs for Marine personnel

Contract Information

Type	Amount	Duration
CPIF	$20 million (approx)	5 years

Schedule

RFP Release	Bid Due	Award	Completion
SDB 8(a) letter contract	N/A	9/84	12/89

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Contractor(s)

	Company	Function
Prime Contractor	Automated Sciences Group	Technical Services

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P
Software Development	P
Education/Training	P

Project Components Detail

Consulting Services

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Management Project Assistance	P
Feasibility Analysis	P
Cost-Effectiveness Trade-off Studies	P

Software Development

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Stockage Computation	P
Replenishment Overview	P
Materials Return	P
Special Programs	P

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Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P
Systems Design	P
Contract Programming	P
Software Documentation	P

Education and Training
$300,000

Contractor Responsibility:	P

Education and Training Services
Vendor instruction of user personnel in operation

Original Funding

$2,315,855

Project Scope

Contract has been modified three times to include: detailed design, programming, implementation, training, data base modifications, additional applications, testing, increased implementation and testing.

Project Status

Software and documentation have been completed and delivered. Implementation and training are on hold pending completion of interfacing applications from the Marine Corps.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Data Center Facilities Management**

Department: **Pension Benefit Guaranty Corporation**

Branch: **Computer Services Division**

Mission Problem/ Function

To provide facilities management functions for the Pension Benefit Guaranty Corporation's data center

Major Tasks Performed

- Performed hardware and software evaluations
- Conducted the procurement process
- Installed hardware and software
- Performed all data center maintenance
- Provided office automation support: equipment installation, maintenance, software installation, upgrades, and troubleshooting

Contract Information

Type	Amount	Duration
Labor-hour	$1,786,297	15 months

Schedule

RFP Release	Bid Due	Award	Completion
		10/87	12/88

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Contractor(s)

	Company	Function
Prime Contractor	Network Solutions	Facilities Management

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P
Systems Operations	P
Education/Training	P

Project Components Detail

Consulting Services
$500,000

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	P
Services Management Consulting	P
Technical Project Assistance	P
Management Project Assistance	P
Feasibility Analysis	P

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Systems Operations (GOCO)
$1,186,297

Contractor Responsibility:	P

Contractor personnel to manage client facilities: 23

Education and Training
$100,000

Contractor Responsibility:	P

Education and Training Services
Vendor instruction of user personnel in operations Other documentation services

Original Funding $1,786,297

Project Scope The project scope did not change after the contract was awarded.

Project Status Contract was successfully fulfilled and completed by 12/31/88.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **SSA End User Computing Center**

Department: **Social Security Administration**

Branch: **Office of Information Systems Technology**

Mission Problem/ Function

An information center for end users was required to demonstrate and evaluate office automation equipment and software, and to provide daily support functions.

Major Tasks Performed

- Designed and established end-user information center
- Recommended policies and procedures
- Provided core support group to administer and operate the information center on a daily basis

Contract Information

Type	Amount	Duration
Labor-hour	$600,000	3yrs, 3 months

Schedule

RFP Release	Bid Due	Award	Completion
8(a) set aside	N/A	10/85	12/88

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Contractor(s)

	Company	Function
Prime Contractor	Network Solutions	Technical assistance

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P

Project Components Detail

Consulting Services
$600,000

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Technical Project Assistance	P
Management Project Assistance	P
Feasibility Analysis	P

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Original Funding Not available

Project Scope The agency and contractor negotiated changes to the contract after it was awarded.

Project Status Contract was satisfactorily completed in 12/88.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **Royal Thai Air Defense System (RTADS)**

Department: **U.S. Air Force Systems Command (for Thailand)**

Branch: **Electronic Systems Division**

Mission Problem/ Function

To develop and install a total real-time air defense system for the Kingdom of Thailand

Major Tasks Performed

- Developed and installed a fully integrated air defense information system
- Processed live data via satellite
- Trained Thai Air Force personnel in operations, programming, and maintenance using CAI and CBE

Contract Information

Type	Amount	Duration
FFP	$70 million	5 years

Schedule

RFP Release	Bid Due	Award	Completion
4/85	8/85	12/85	4/90

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Contractor(s)

	Company	Function
Prime Contractor	Unisys	Professional services

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	P
Software Development	P
Systems Operations	P
Education/Training	P

Project Components Detail

Consulting Services
$9 million

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	P
Services Management Consulting	P
Technical Project Assistance	P
Management Project Assistance	P
Feasibility Analysis	P
Cost-Effectiveness Trade-Off Studies	P

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Software Development $42 million

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Air Defense	P

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P
Systems Design	P
Contract Programming	P
Software Documentation	P

Systems Operations (GOCO) $12 million

Contractor Responsibility	P

Contractor personnel to manage client facilities: 80

Education and Training $7 million

Education and Training Services
Computer-Aided Instruction (CAI)
Computer-Based Education (CBE)
Vendor instruction of user personnel in operations
Vendor instruction of user personnel in programming
Vendor instruction of user personnel in maintenance

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Additional Services

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Added sites	P
Training	P
Maintenance	P

Original Funding

$34 million

Project Scope

Additional services not specified in the original contract were renegotiated.

Project Status

This ongoing contract was proclaimed "Program of the Year" in 1987 by ESD.

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FEDERAL PROFESSIONAL SERVICES PROJECT CASE STUDY

Program Name: **CLASSIFIED**

Department: **U.S. Air Force Systems Command**

Branch: **Not Disclosed**

Mission Problem/ Function

The U.S. Air Force needed to automate one of its strategic command posts.

Major Tasks Performed

- Analyzed system requirements
- Developed Ada software design using object-oriented design
- Developed, tested, and integrated Ada software for the command post.

Contract Information

Type	Amount	Duration
FFP level-of-effort	?	2 years

Schedule

RFP Release	Bid Due	Start	Completion
		3/87	1/89

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Contractor(s)

	Company	Function
Prime Contractor	Not disclosed	Project management software development
Subcontractor	SOFTECH	Ada software engineering
Subcontractor	Digital Equipment Corporation	Systems engineering
Subcontractor	CTA	Documentation, requirements
Subcontractor	NSR	Documentation, requirements

Project Components Overview

Professional Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Consulting Services	S,O
Software Development	P,S
Systems Operations	P
Education/Training	O

Project Components Detail

Consulting Services

	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Systems Management Consulting	S
Services Management Consulting	S
Technical Project Assistance	S
Management Project Assistance	S
Cost-Effectiveness Trade-Off Studies	S

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Software Development

Applications Developed/ Modified	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
Workstation User Interface	P,S
Message Processing	S
DBMS Interface	P,S
Commercial Software	P,S

Software Development Services	Contractor Responsibility (P=Prime Contractor, S=Subcontractor, O=Other)
User Requirement Definition	P,S,O
Systems Design	P,S
Contract Programming	S
Software Documentation	P,S,O

Systems Operation (GOCO) $200,000

Contractor Responsibility	P,O

Contractor personnel to manage client facilities: 10

Education and Training $200,000

Contractor Responsibility	O

Education and Training Services
Vendor instruction of user personnel in operations
Vendor instruction of user personnel in programming
Ada programming

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Original Funding	?
Project Scope	Changes to the original task order were negotiated with the USAF user organization on a schedule/cost impact assessment for all changes.
Project Status	Phase I of this project has been completed successfully

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E

Acquisition Plans and Preferences

1. Characteristics of a Successful Contractor

Agencies surveyed in the 1987 study showed sharp differences of opinion on successful contractor characteristics, as shown in Exhibit IV-13. In particular, civil agencies ranked staff experience first, while DoD agencies listed it in fifth place. Vendor opinions more closely paralleled those of the civil agencies.

EXHIBIT IV-13

RANKINGS OF CHARACTERISTICS OF SUCCESSFUL CONTRACTORS

Characteristic	Ranking*		
	Civil Agencies	DoD Agencies	Vendors
Price	2	[1]	[1]
Support	4	4	(7)
Staff Experience	[1]	5	2
Software Development Experience	3	[1]	3
Application/Functional Experience	4	3	6
Federal Contract Experience	6	(7)	4
Agency Experience	(7)	5	4

* Ranking: 1 = Most Important ([ ]), 7 = Least Important (( ))

Updated 1987.

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In presenting the choices, INPUT did not attempt to distinguish between vendor price and agency cost. Typically, price represents the quoted charges for performing the work, whereas cost represents the final payment requirements of the agency. However, for the purposes of this survey, the two terms were combined.

The vendors included in this survey consisted mainly of medium- to large-scale professional services firms with many years of federal contracting experience. Exhibit IV-14 compares agency and vendor ratings (as opposed to rankings) on the same issue.

EXHIBIT IV-14

AGENCY RATINGS OF THE CHARACTERISTICS OF A SUCCESSFUL PROFESSIONAL SERVICES CONTRACTOR

Characteristic	Importance Ratings *		
	Civil Agencies	DoD Agencies	Vendor Perception
Price	3.9	4.2	4.5
Support	3.7	3.4	3.0
Staff Experience	4.0	3.2	3.9
Software Development Experience	3.8	4.2	3.7
Application/Functional Experience	3.7	4.0	3.4
Federal Contract Experience	2.9	3.0	3.6
Agency Experience	2.7	3.2	3.6

* Ratings based on 1-5 scale; 5 = most important and 1 = least important
Updated 1987

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Both the civil agencies and the DoD concur that application/functional experience is an important characteristic, whereas vendors consider it of lesser importance. Differences in ratings for federal contract experience and agency experience exist between the agencies and vendors. Vendors assigned an important rating to both factors, whereas the agencies themselves gave these factors the lowest ratings for importance.

2. Selection Criteria

Agency ranking of selection criteria tends to change from one survey to the next. However, the proposed technical solution usually remains at the top of the list. Exhibit IV-15 shows that both vendor reputation and staff experience ranked ahead of cost. INPUT's research outside of this survey contradicts this ranking. In particular, most federal evaluation models rank cost second, if not first.

EXHIBIT IV-15

RELATIVE RANKING OF CRITERIA USED IN SELECTING A PROFESSIONAL SERVICES VENDOR

Selection Criteria	Ranking
Proposed Technical Solution	1
Vendor Reputation	2
Staff Experience	3
Cost	4
Project Management	5

Updated 1988.

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Cost is usually ranked first on low-priced body-shop procurements, in which company multipliers in the range of 1.3 to 1.5 are typically bid. This means that, for such areas as contract programmers or computer operators, the vendor bills the government for 1.3 to 1.5 times the employee's salary. Benefits are low and attrition, as might be expected, can be quite high. The government almost always awards these contracts based on lowest cost, and then often regrets the decision later on. Poor vendor performance from low-priced, short-term personnel often costs the government more in the long run.

However, on high-level consulting jobs and other professional services contracts, particularly those with functional specifications, the proposed technical solution may indeed rank higher than cost. The ranking in Exhibit IV-15 reflects the preferences of the respondent population, mainly agency program managers. Contracting officers rarely participate in surveys, thus precluding their views from being properly represented.

3. Preference for Type of Vendor

In an earlier survey, INPUT asked both civil and DoD agencies which type of vendor appears more desirable for performing their required professional services. The results are shown in Exhibit IV-16. Over 50% of the agencies preferred professional services vendors and stated that these vendors were more responsive to meeting a variety of needs and are more knowledgeable in specialized applications.

A larger share of the civil agencies (larger than the share among DoD agencies) preferred software products vendors. Civil agencies' main reason for selection of this type of organization was the software vendor's experience and suitability for certain types of professional service projects.

Presumably, agencies did not believe that all service vendors are capable in all areas. Rather, they viewed vendors according to the vendor's own focus and prefer to match that focus to the requirements of the project. Manufacturers come to the fore when the professional services requirements are closely tied to a hardware system, professional services vendors lead when a total solution is required, and software products vendors have the edge when the services are tied to a software package. Vendors face a "Catch-22" when a niche is required, but the niche may exclude the vendor from other markets. Often, a hardware vendor teams with one or more professional services firms to meet agency requirements.

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EXHIBIT IV-16

FEDERAL AGENCY VENDOR TYPE PREFERENCE FOR PROFESSIONAL SERVICES

Vendor/ Organization Type	Percentages	
	Civil Agencies	DoD Agencies
Mainframe Manufacturer	16	15
Professional Services Company	55	69
Not-For-Profit	9	8
Software Products Vendors	20	8
Total	100	100

Updated 1987.

4. Contract Types

The federal agencies surveyed indicated that they have a slight preference for using a mixture of contracts for professional services, as shown in Exhibit IV-17. This preferred approach is a mixture of cost-plus, fixed-price and other types of contracts, including incentive, fixed labor, and time-and-materials contracts. Many respondents recognize the inherent difficulties of pricing programming and analysis projects by preferring "cost plus" contracts in this area, and reserving fixed-price contracts for situations where the requirements are well defined.

Agencies were also queried on the future use of Multiple Award Basic Ordering Agreements to acquire professional services. The results are in Exhibit IV-18. Some agency officials have limited experience with BOAs, but expected usage to increase as a means of reducing procurement lead time. GSA, in particular, has taken the lead in establishing Systems Engineering and Technical Assistance (SETA) contracts. These are issued from the regional offices (for regional coverage) and the FEDSIM and Software Management Center in Falls Church, VA (for national coverage).

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EXHIBIT IV-17

FEDERAL AGENCY CONTRACT TYPE PREFERENCE FOR PROFESSIONAL SERVICES

Contract Type Preference	Percent of Respon-dents	Reasons Cited
Cost-Plus	6	Research oriented/ developmental services
Cost-Plus Incentive Fee	30	Nonspecific requirements Innovative/creativity More valuable to agency
Fixed-Price	30	Requirements well defined Reduce government liabilities Government retains control
Mixed/Other	34	Depends on type of service Time and materials gives flexibility

Updated 1988.

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EXHIBIT IV-18

CHANGES IN AGENCY USE OF BASIC ORDERING AGREEMENTS (BOAs)

Change in BOA Use	Percent of Respondents
Increasing	67
Decreasing	17
Remaining the Same	8
Little Experience	8

F

Projected Trends in the Use of Professional Services

1. Increases/Decreases in Contracting

Past agency surveys have shown little interest in increasing professional services contracting. This contradicts high-level agency budget data, as well as INPUT's compilation of professional services opportunities. The differences may reflect the scope of the respondents. Although they do not expect increases in the programs they manage, more programs are being contracted out. At any rate, the survey data tends to dampen growth prospects in some professional services delivery modes.

2. Transition/Conversion to In-House Support

When a professional services contract is completed, the government is faced with a choice—should the continued support be transferred in-house, or should that continued support be obtained from a vendor? The civil agencies preferred to convert the program to contractors for continued support services. Half of the DoD agencies surveyed had no clear policy and made a decision based on the circumstances of the specific project.

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As a follow-up to this question, the government agencies surveyed by INPUT were asked to reveal any plans to convert professional services contracts to in-house or to convert in-house support functions to outside contractor support. Although Exhibit IV-19 shows that there are many more plans to convert in-house support to outside contractor support than vice versa, there is a growing body of agencies with plans to move services and support from contractors to in-house. With the current shortfall of staff and funds, it may be that these plans more accurately reflect contract prioritizations; that is, only priority projects will be contracted and other projects will be scheduled as time and money permit.

EXHIBIT IV-19

AGENCY PLANS FOR CONVERSION OF CURRENT PROFESSIONAL SERVICES AND SUPPORT

Planned Conversion	Percentages	
	Civil Agencies	DoD Agencies
From Contractor to In-House Staff	24	30
From In-House Staff to Contractor	51	60
No Conversion Plans	25	10
Total	100	100

Updated 1987.

3. Reasons for Transition/Conversion

In a few reported occasions, the reasons the government agencies planned to convert professional services contracts to in-house support were to reduce costs and to minimize reliance on contractors. The DoD was more concerned about cost reduction, and the civil agencies, except for NASA and Energy, were more concerned about minimizing their dependence on contractors. The application areas are primarily those of a

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general business type. In NASA and Energy, facilities and ADP operation are readily contracted out to relieve the scientific and technical in-house staffs. The Navy has recently announced a program to bring various types of engineering support in-house.

The reasons the government agencies planned to convert in-house functions to outside contractor support were:

- Take advantage of expertise not available within the government
- Balance workloads and supplement in-house staffs
- Reduce costs
- Expediency
- Satisfy the requirements of government policy, in particular OMB Circular A-76

Almost all types of applications are planned for conversion to outside contractor support. The majority of the candidate applications are administrative in nature. Those to be converted to satisfy the requirements of OMB Circular A-76 are primarily in the areas of applications software maintenance, and operations and maintenance of hardware.

Many agencies were more reluctant to contract out for mission-critical systems, expressing the need for better control. However, NASA remained a notable exception to this trend.

4. Factors Affecting Future Use of Professional Services

From the perspective of the government respondents, the nontechnical factors that were expected to affect the future use of professional services by the federal government were the same for both defense and civil agencies, as shown in Exhibit IV-20. However, the degree of impact differs.

Funding issues headed the list of concerns for both civil and DoD agencies, but more civil respondents mentioned this factor. This suggests that civil agencies were reflecting the priorities of the Reagan Administration. Recent research has shown a shift in that trend, reflecting defense budget increases limited to inflation. Further, most of the defense funding reflects programs already in place, rather than new initiatives and thus new opportunities.

Directives and OMB policy factors continued to be present, with marginally larger civil respondents perceiving a significant impact. Agency respondents cited that the OMB Circulars, especially OMB A-120, which contains guidelines for use of consulting services, have made it more difficult to contract for professional services. Some respondents commented that they are hopeful that the proposed revisions to the FIRMR will clarify the definition of ADP support services and provide some assistance to contracting officials.

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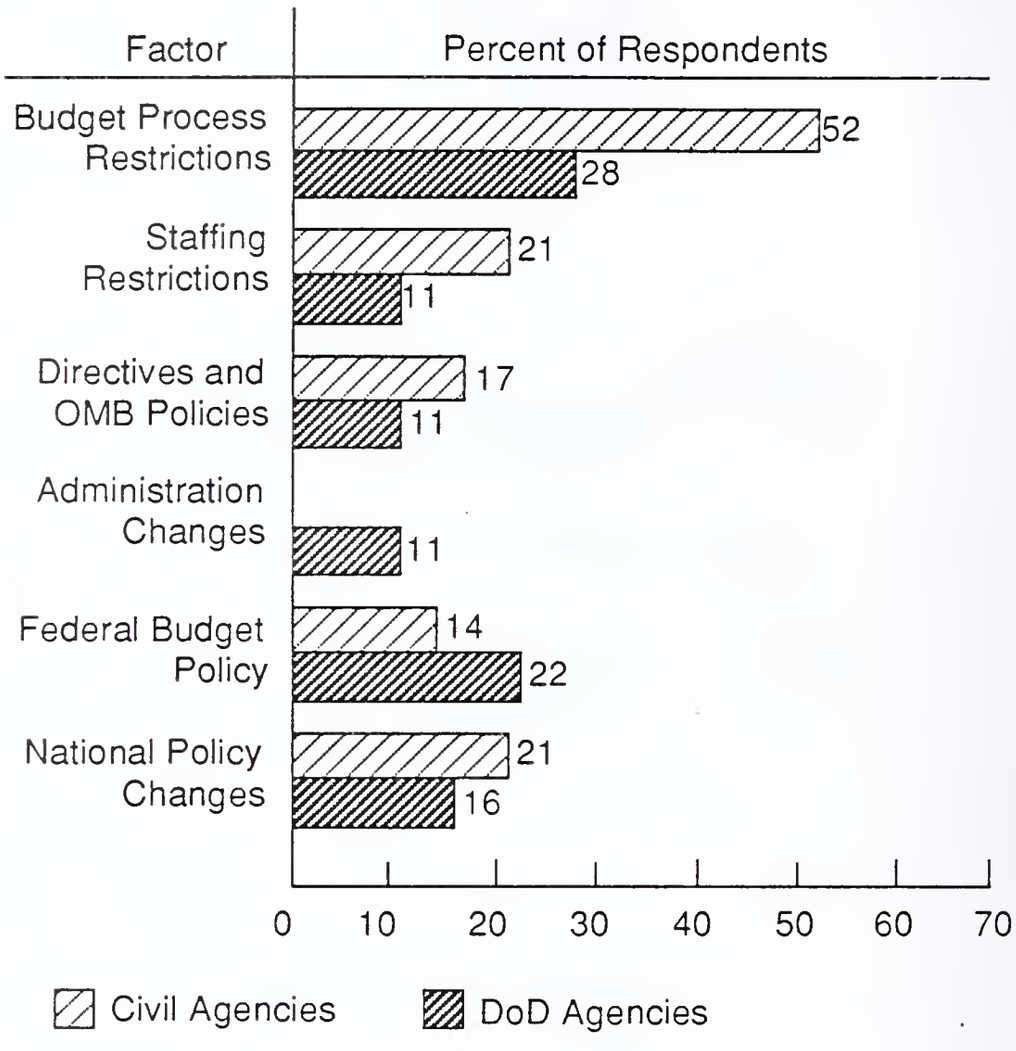
EXHIBIT IV-20

AGENCY VIEWS OF FACTORS IMPACTING FUTURE USE OF PROFESSIONAL SERVICES



Updated 1988.

In the same category, GSA policies were also noted because they are in a state of change. Many respondents were of the opinion that the General Services Administration was attempting to make it easier for agencies to buy services. As mentioned earlier, GSA is expanding its SETA contracting activity to a wider variety of disciplines. Also, the Trail Boss Program might enhance the need for professional services to help justify resources and to support the concurrent process.

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There are, however, countervailing trends. Recent changes in leadership at both GSA and the House Government Operations Committee have signaled a shift in GSA's policies. The agency accommodation and facilitation style of the Frank Carr era may be giving way to a more confrontational relationship between GSA and the agencies. At this writing, it is still too early to characterize the new style. However, GSA's recent suspension of dozens of Delegations of Procurement Authority and its announced plans to track some 90 procurements more closely suggest fundamental changes.

Federal personnel policies were also identified as an incentive to increase the use of professional services firms. Practically all agency executives that INPUT interviewed cited difficulty in hiring staff with strong technical credentials. In the Washington area, at least, good candidates can frequently obtain higher salaries and better benefits in the private sector than in the government. Many government employees with fewer than fifteen years of service are leaving government. Thus, agency executives, usually with more than twenty years of service themselves and looking toward retirement, must contract out most of their technical support activities.

Another critical need exists in the area of contract administration. Historically, Contracting Officers' Technical Representatives (COTRs) have often been inadequately trained for their jobs. This led to insecurity, manifesting itself in two unfortunate ways:

- Some COTRs accept virtually everything the vendor tells them, leading to poor government oversight of the project.

- Some COTRs accept virtually nothing the vendor tells them, finding security in doing everything by the book. This policy often leads to delays and inadequate attention to the government's real problems.

GSA's training initiatives for the "Trail Boss" program represent a major step toward improving contract administration. Through Trail Boss, agency executives are expected to learn, among other things, the proper techniques in dealing with contractors. This knowledge may then trickle down to the staff dealing directly with contractors on a day-to-day basis. The good COTR should be fair, flexible, but sometimes firm. As agencies increase their dependence on professional services firms, better contract administration will likely result.

Agency representatives were also asked to identify technical factors that would alter their agency's professional services plans. More than 25 factors were identified, and the five that were named most frequently are listed in Exhibit IV-21.

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EXHIBIT IV-21

TECHNOLOGICAL FACTORS AFFECTING FUTURE GOVERNMENT SPENDING FOR PROFESSIONAL SERVICES

Factor	Civil Agencies Rank*	DoD Agencies Rank*
Evolution in use of personal computers	1	1
Developments in software development and maintenance	2	4
Improvements in end-user capabilities	3	5
Changes in microcomputer architecture	4	2
Proliferation of LANs	5	3

* Rank based on frequency of mention by respondents.

Updated 1987.

Personal computers cut both ways in the federal professional services market. On one hand, their greater functionality and wider penetration have increased federal end-user computing, thus reducing the need for contract programmers. On the other hand, many agencies require more trainers and consultants to support these end users. Thus, while ranking first in agency surveys, personal computers are exerting opposing forces on the market.

Historically, defense agencies have installed more local-area networks (LANs) than have civil agencies. Therefore, it is not surprising that defense agencies would rank LANs higher. However, this installation pattern is changing, particularly with some activities at NASA, Energy, and the Commerce Department. Therefore, future surveys will likely show a shift in this area.

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5. Suggestions for Future Improvements to Vendor Services

Agency respondents were queried as to their suggestions for how vendors might make professional services more valuable to the federal government over the next five years. As should be expected, the replies varied due to the different types of levels of experience the respondents have encountered with vendors. Details are in Exhibits IV-22 and IV-23.

EXHIBIT IV-22

CIVIL AGENCIES' SUGGESTIONS FOR IMPROVEMENTS TO VENDOR SERVICES

Suggestions	Rank*
Increase cooperation and responsiveness to agency needs	1
Increase experience of staff	2
Increase adherence to agency pricing policy	3
Increase management skills	4
Increase availability of off-the-shelf software	5

* Rank based on frequency of mention by respondents.

Updated 1987.

The responses were normalized somewhat to present coherent views. However, responses from civilian and defense agencies were not especially comparable. As a group, the civil agency responses focused primarily on the relationships between federal and vendor personnel. Defense agency comments, on the other hand, focused more on the level of technology support, in terms of products, services, and personnel. Both groups stressed the need for better understanding of agency needs, suggesting that vendors need to empathize better with their clients.

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EXHIBIT IV-23

DEFENSE AGENCIES' SUGGESTIONS FOR IMPROVEMENTS TO VENDOR SERVICES

Suggestions	Rank*
Increase availability of integrated services	1
Increase awareness of DoD standards	2
Increase use of fourth-generation tools for development	3
Increase work force's knowledge and ability	4
Increase awareness of agency requirements	5

*Rank based on frequency of mention by respondents.

Updated 1987.

Interviews with agency representatives also solicited responses to the question of how effectively vendors completed teaming arrangements. Respondents were in agreement that vendors were already doing a "pretty good job," but some improvements could be made. Current shortcomings were in the area of acquiring specialization, project management, and staff expertise. Also noted was a significant level of problems between teaming members and a lack of communication with the government in the formulation of teams in response to government needs. In some cases, agency executives find themselves in the position of arbitrating disputes among team members.

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V

Competitive Trends

A Vendor Participation

1. Vendor Respondent Characteristics

Exhibit V-1 displays a profile of vendor respondents from three perspectives—total corporate revenue, professional services revenue, and percentage of professional services revenue from the federal government. This data was developed primarily from earlier survey efforts. The vendor respondents represented many of the largest professional services suppliers to the industry as a whole and to the federal government sector.

The vendors surveyed generally sold each of the categories of professional services shown in Exhibit V-2. Revenue distribution parallels the industry with software development and consulting as the primary revenue sources.

Vendors planned to provide additional professional services in the future in response to demands from government clients. A primary reason for this increased demand has been the government's emphasis on OMB A-76 policy. In addition, some of the government clients preferred a single contractor to be responsible for all aspects of developed systems.

As depicted in Exhibit V-3, vendors acquired professional service contracts for support functions (which were previously performed in-house) more frequently than they have lost them. The percent of contracts gained from in-house staff remains roughly the same as in an earlier study, but the share of vendors experiencing a loss of contracts has declined. This situation seems to reflect the agencies' continuing shortage of in-house staff available to perform support services. INPUT expects this trend to continue with more central design activities (CDA), especially in Defense, being contracted out.

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EXHIBIT V-1

REVENUE CHARACTERISTICS OF RESPONDENT PROFESSIONAL SERVICES VENDORS

Corporate Revenue ($ Millions)	Percent
Less than $500 Million	38
$500 Million-$1 Billion	24
Over $1 Billion	38
Professional Services Revenue ($ Millions)	**Percent**
0 to 100	8
100 to 250	25
250 to 500	42
Over $500	25
Government Percent of Professional Services Revenue	**Percent of Vendors**
Less than 20%	8
20% to 80%	24
80% to 100%	68

Updated 1988.

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EXHIBIT V-2

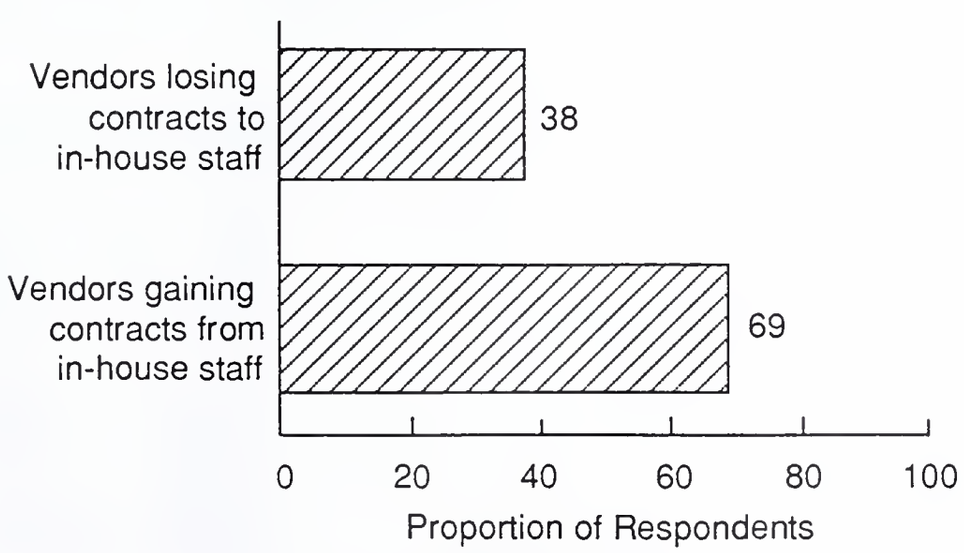
TYPES OF PROFESSIONAL SERVICES PROVIDED BY RESPONDENTS

Category	Proportion of Respondents		Average Percent of Respondent Revenues
	Currently Providing (Percent)	Plan to Provide (Percent)	
Consulting Services	92	100	29
Education and Training	75	83	5
Software Development	92	100	30
Systems Operations	42	67	22

Updated 1988.

EXHIBIT V-3

PROFESSIONAL SERVICES COMPETITION FROM IN-HOUSE GOVERNMENT STAFF



Note: Total exceeds 100% because the results were not mutually exclusive.

Updated 1988.

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As shown in Exhibit V-4, the experience of the vendors surveyed is that most frequently the follow-on support for professional services contracts with the government for design, programming, and analysis was provided outside the agency by the original vendor. In-house follow-on has decreased rapidly, while third-party follow-on has kept pace at approximately the same amount as previously reported.

EXHIBIT V-4

SOURCE OF FOLLOW-ON SUPPORT FOR PROFESSIONAL SERVICES CONTRACTS

Source of Follow-on Support for Completed Professional Services Contracts	Proportion of Respondents (Percent)
In-House by Government	8
Outside Agency by Original Vendor	77
Outside Agency by Another Vendor	15
Total	100

Updated 1988.

- The type of work moved in-house to government staffs typically ranged from software maintenance to consulting, analysis, and systems operations. Applications ranged from administrative and financial systems to avionics systems and shipboard-computing systems.

- The primary reason given by agencies for moving the work in-house was to involve government personnel in the work and to eliminate reliance of the government on vendor personnel support of agency work. The Navy has recently embarked on an ambitious program in this area. A secondary reason was to reduce the costs by minimizing the amount of effort assigned to maintain software systems. Infrequently, it is part of an OMB A-76 cost comparison.

- The majority of the follow-on professional services support provided by vendors was for systems operations but there were several instances of consulting, software development, and software maintenance. Applications included administrative and financial systems; data bases; shipboard-weapons systems; and environmental, health, and energy systems.

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- Most often the government utilized contractors for follow-on support because either the agency did not have sufficient staff and/or the expertise to perform the tasks or an OMB A-76 cost comparison indicated that contracting was more cost-effective.

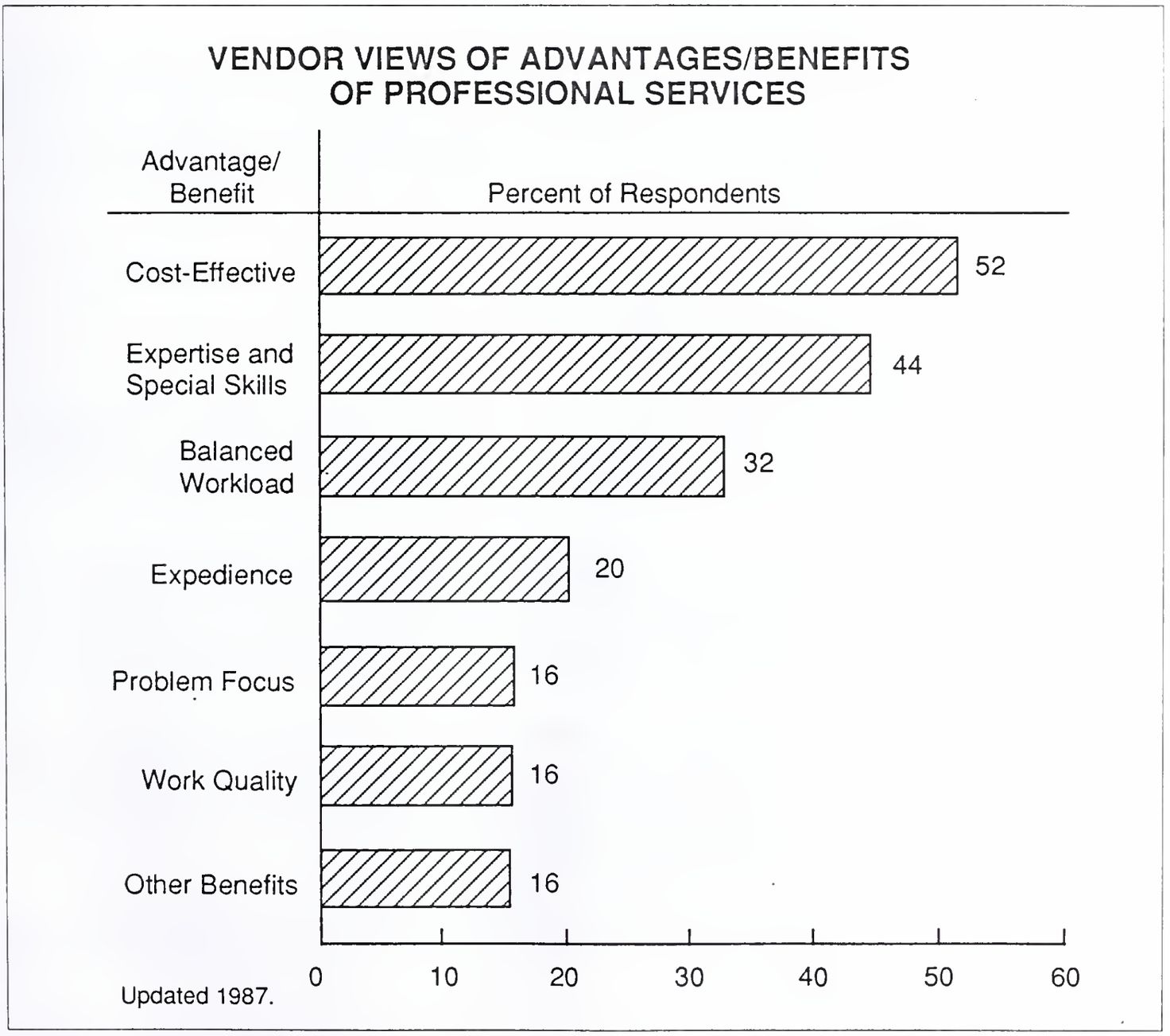
B

Vendor Market Perceptions

1. Advantages/Benefits of Contracting

Vendors surveyed by INPUT typically had wide-ranging opinions on the advantages and benefits to the federal government of using professional service contracts. Vendor opinions are shown in Exhibit V-5. Similar agency perceptions were presented in Exhibit IV-11. Agencies placed more importance on expertise than vendors, and considerably less emphasis on cost than vendors.

EXHIBIT V-5



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- The ability to obtain expertise not available within the government agency was seen as a primary benefit of contracting for professional services. Vendors believe that specialized skills are more easily obtained by contracting and that contractors can change the skill mix readily to meet changing government requirements.

- Reduced cost to achieve results was also seen as a primary advantage in contracting for professional services. Vendors believed that the competitive environment allows the government to contract for professional services in a very cost-effective manner.

- The ability to balance workloads and augment in-house government staffs during peak workload times was considered an advantage because the government can start or stop work without any dislocation of in-house personnel. In addition, there is an added cost benefit because reduction-in-force (RIF) costs are avoided.

- Expedience, or a means of getting work done faster without the inherent administrative problems of shifting personnel to perform the work in-house, was considered another significant advantage. Several vendors believed that there is less hassle and fewer problems associated with ADP if the work is performed by a professional services contractor.

- Some vendors believed that contractor employees are more motivated to perform than government employees.

2. Disadvantages/Liabilities of Contracting

The vendor views of the disadvantages and liabilities of contracting for professional services shown in Exhibit V-6 are somewhat different than those expressed by government agencies, as shown in Exhibit IV-12.

- The major disadvantage identified by the vendors was associated with the actual procurement process. Vendors considered the government procurement process long and inflexible. They believed the government has had a problem in evaluating quality versus price since there is always the threat of a protest if the lowest-priced bidder does not win.

- Dependence on the contractor was considered another major liability. If contracting does not allow the government in-house staff to build its skills, then when the contractor leaves the expertise leaves, and when contracts are recompeted, some loss in continuity could occur if the incumbent is replaced.

- Performance risk is another liability because the lack of control by government agencies over contractor personnel is a potential problem area.

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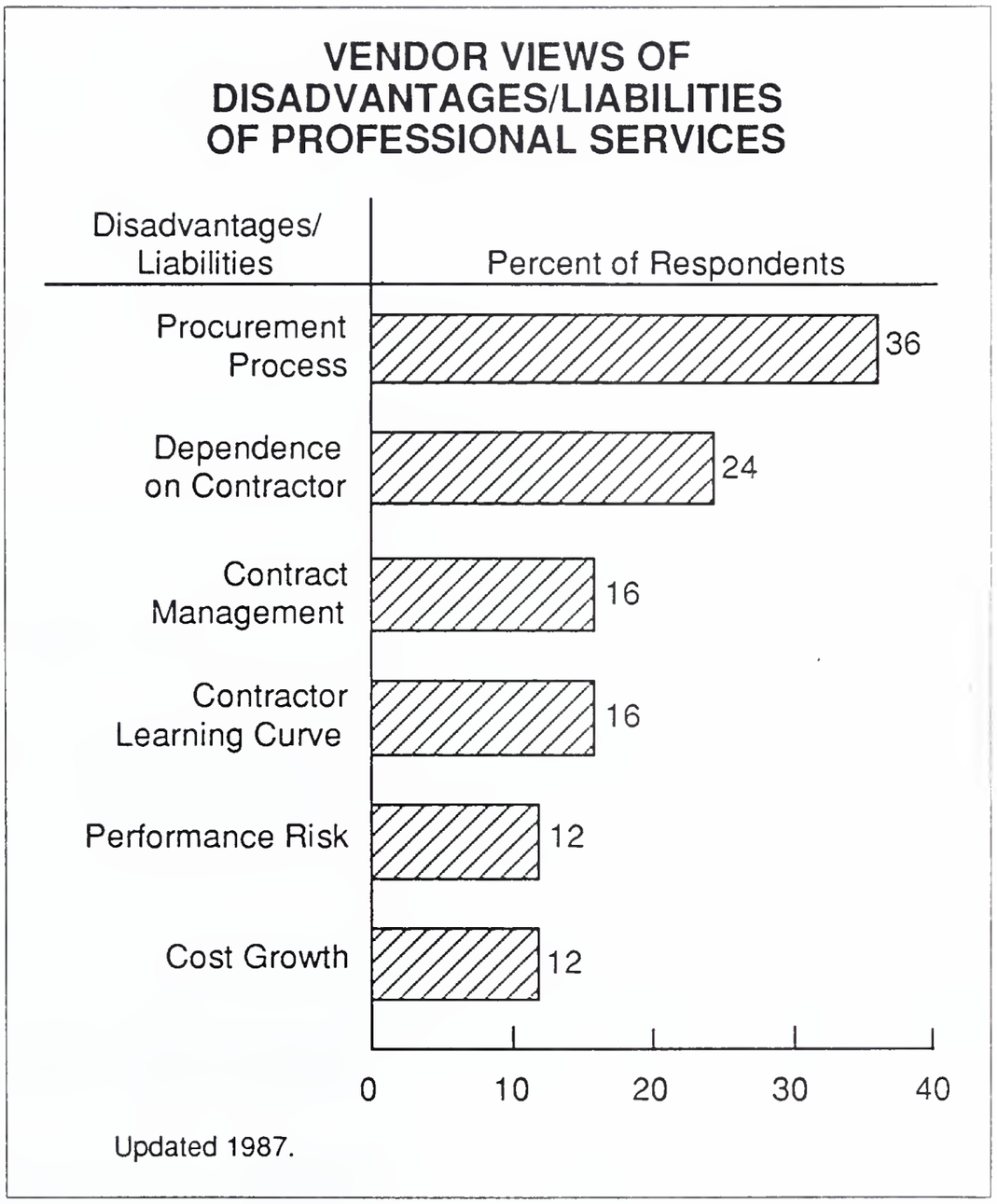
EXHIBIT V-6



- Contract management was also considered a significant disadvantage. Some vendors stated that satisfying the complexities and legal obligations of a contract can pose serious problems through oversight or incorrect interpretation.

3. Poor/Satisfactorily Performed Contracts

The factors that vendors believed affect the results of professional services contracts are illustrated in Exhibits V-7 and V-8. These project components were mentioned by vendors who contributed case studies for the 1989 update of this report.

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EXHIBIT V-7

FACTORS CONTRIBUTING TO SATISFACTORILY PERFORMED CONTRACTS

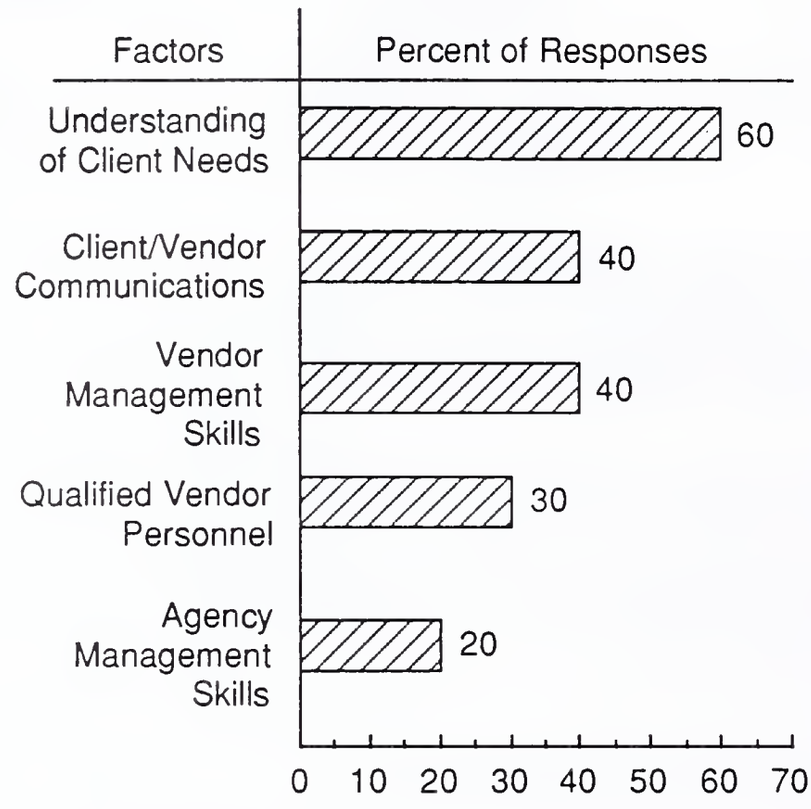
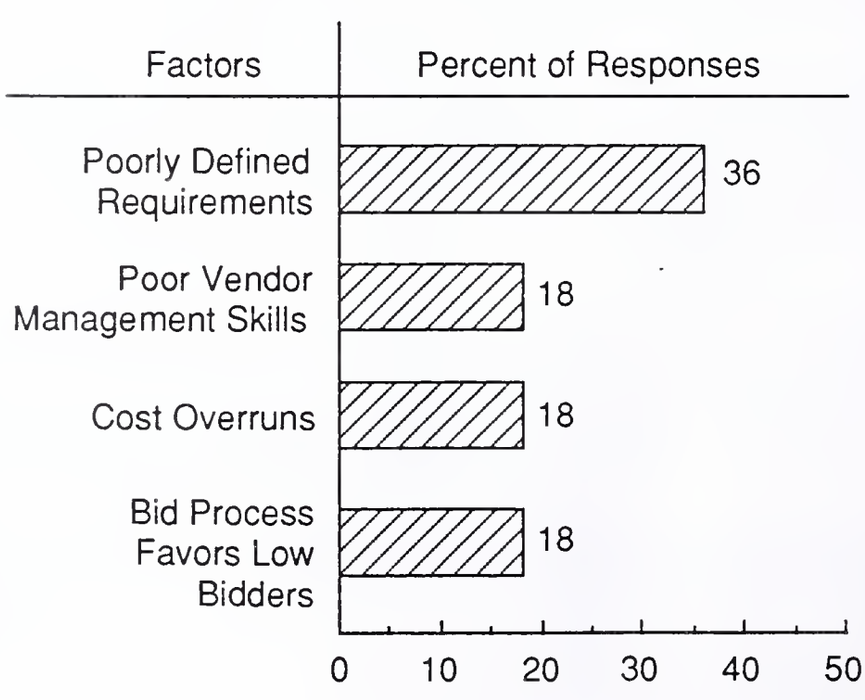


EXHIBIT V-8

FACTORS CONTRIBUTING TO POORLY PERFORMED CONTRACTS



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a. Satisfactorily Performed Contracts

Vendors overwhelmingly stressed that the key to a satisfactorily performed professional services contract is an understanding of the client agency's needs. Well defined RFPs and task orders allow contractors to respond to agency expectations.

Another way agencies and vendors can help in achieving successfully completed projects is to communicate to each other. Open lines of communication throughout a contract's life cycle create realistic attitudes, facilitate an improved understanding of requirements and promote the vendors' image in the agency.

While poor vendor management skills can adversely affect a project, good skills obviously contribute to successful completion of projects. Thorough work planning, progress review, project control, and qualified and stable contractor personnel are all necessary components of a satisfactorily completed contract.

If the agency is also technically knowledgeable and possesses good project management skills, it can play an active role in monitoring the contractor's performance to assure compliance to the project's requirements and schedule.

b. Poorly Performed Contracts

Professional services contractors are faced with the difficult problem of meeting agencies' expectations when an S.O.W. is incomplete or an RFP does not specify explicit requirements. Poor specifications tend to ensure poor contractor performance.

If vendors possess poor staff and project management skills, professional services contracts will have problems in achieving successful completion. Contractors must strive to place personnel with strong track records in management positions of important projects and of junior staff members. A winning team needs to be assembled. Vendor project managers must be able to reduce attrition and also provide for additional staff training if necessary. An unqualified staff will undoubtedly result in a poorly-performed contract.

When a contractor exceeds budget allocations for a project, it invites the contracting agency's displeasure even if the project's technical specifications have been met.

Vendors also mentioned that the bidding process itself contributes to producing poorly performed contracts. Since the lowest bid is usually the winning bid, the best qualified staff may not perform the project.

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4. Differences between Commercial and Federal Government Markets

The industry respondents in the 1988 study were asked to identify what they perceived to be the differences between the commercial markets and the federal market for professional services. These differences are presented in Exhibit V-9.

EXHIBIT V-9

GOVERNMENT VERSUS COMMERCIAL MARKET DIFFERENCES

Market Differences		
Federal Market	Commercial Market	Rank*
Greater price sensitivity	Less price sensitivity	1
Complex acquisition process	Simpler purchasing procedures	2
Wider range of evaluation criteria	Narrower basis for award	3
Lengthy phased development cycle	Shorter-term evolution	4
Subject to greater legal and economic constraints	Less rigid legal and economic constraints	5

*Rank based on frequency of mention by respondents.

Updated 1988.

- Based on frequency of mention, the greater price sensitivity for acquiring services in the federal government was the most highly rated difference. Price is more of an issue in the federal market due to the bidding process, and vendors supply pricing information for GSA schedules. The second most-noted difference was the complexity of the acquisition process in the federal government, compared to the purchasing procedures followed in the commercial market. The federal acquisition process is often lengthy and involves adherence to numerous regulations.

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- Surprisingly, pressure on profits was not included in the survey results. Unlike commodity vendors (hardware and packaged software vendors, telecommunications service providers), professional services firms are selling the time of expert people. The competitive environment makes it difficult to pay proper salaries and apply the appropriate multiplier in some contracts. A 1988 report cited a government contract in which "engineers" were receiving $7.29 per hour in wages and benefits. At that level, the government runs the risk of obtaining little or no usable support from the contractor.

- Another pressure on profits comes from cash flow, a particularly difficult problem in professional services contracts. Under DCAA rules, a government contractor may not bill out the interest expense associated with performing a contract. However, in many contracts, agencies withhold 10% to 20% of the incurred expenses until contract completion. If a contract runs more than a year and represents more than $100,000 in billings, cash flow problems can arise. This may discourage some small vendors from bidding on otherwise-excellent government opportunities.

5. Vendor Perceptions of Agency Opportunities

Professional service vendors differed as to which agencies provided the most attractive opportunities. Some vendors had narrowed their federal government marketing to only the DoD agencies or selected civil agencies, while other vendors served both.

Exhibit V-10 shows that 69% of the vendors conducted business with both the DoD and civil agencies. This group will increase over the next few years as more DoD vendors seek to expand their business base to the civil side to offset declining defense spending. Frequent departmental targets include Treasury, NASA, Health and Human Services, Energy, and Transportation.

Over 20% of the respondents served only the defense agencies for professional services. The smallest share of the vendors had chosen to concentrate their professional service business within the civil agencies.

In general, professional services vendors have not noticed agencies favoring contractor assistance for specific types of applications development or customization. Contributing vendors to the 1989 report noted that agencies tended to seek contractor assistance when applications required a high level of technical expertise to develop. Only the applications areas of logistics and financial software were cited by a small percentage of respondents as shown in Exhibit V-11.

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EXHIBIT V-10

VENDOR PERCEPTION OF AGENCY OPPORTUNITIES FOR PROFESSIONAL SERVICES

Agency Opportunities	Percentage
DoD and Civil Agencies	69
DoD Agencies Only	23
Civil Agencies Only	8

Updated 1988.

EXHIBIT V-11

APPLICATION TYPES CONTRACTED TO PROFESSIONAL SERVICES VENDORS

Application Types	Percent of Responses*
No Norm	86
Logistics	14
Financial	14

* Percentages do not add to 100% due to multiple responses.

6. Satisfaction Level

Vendors were asked their opinion of the general level of satisfaction of government agencies with the past performance of professional services contractors in the 1988 revision of this report. The results are presented in Exhibit V-12.

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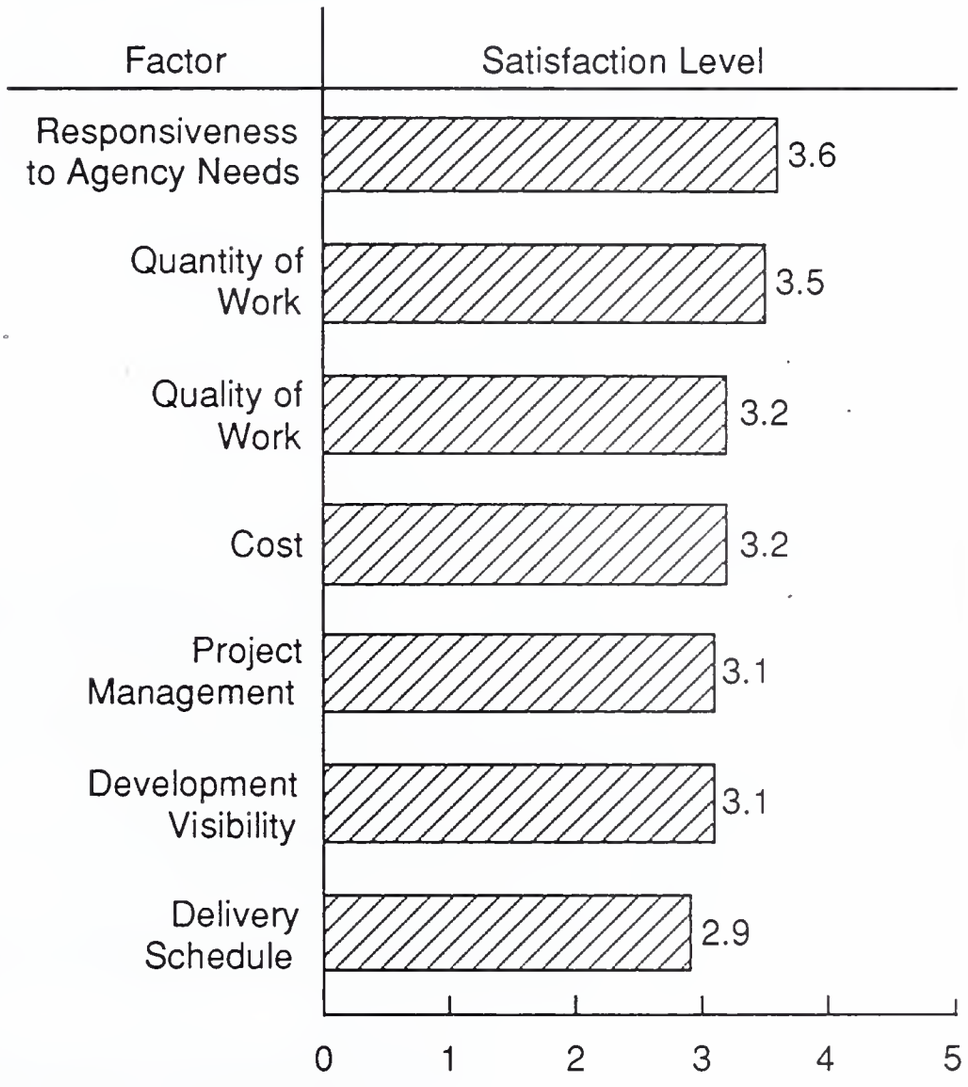
EXHIBIT IV-12

VENDOR PERCEPTION OF AGENCY SATISFACTION WITH PROFESSIONAL SERVICES CONTRACTORS



Updated 1988.

Vendors believed that the federal government was reasonably satisfied with their responsiveness to agency needs and quantity and quality of work. However, the satisfaction levels given by the vendors themselves are not very high. In terms of several characteristics, notably cost and delivery schedule, vendors considered the government satisfaction level relatively low.

This represented a fundamental problem for professional services vendors. Many of the vendors surveyed offered the comment that there needs to be an increased emphasis on holding down costs and providing a timely delivery of the products and services.

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In contrast, however, the contractors that provided case study material for the 1989 report believed that agencies were more than reasonably satisfied with the results of contractors efforts on their projects. The case studies exemplified achievable tasks and the breadth of services provided by the contractors. The responses are illustrated in Exhibit V-13.

EXHIBIT V-13

VENDOR PERCEPTION OF AGENCY SATISFACTION WITH CASE STUDY EXAMPLES

Rating (1-5)*	Percent of Respondents
5	58
4	33
3	8

* Rating based on 1-5 scale: where 5 = extremely satisfied and 1 = not satisfied at all. Average rating by all respondents: 4.5.

C

Vendor Contracting Views

1. Available Contracting Vehicles

Vendors provide professional services to the government under a variety of contract types.

- Cost-plus contracts provide for vendor costs to be paid and a fee added that is either negotiated at the time of award (cost-plus-fixed-fee) or based upon the performance of the contractor in satisfying the contract requirements (cost-plus-award-fee). Cost-plus contracts regulate the margin of profit allowed, but clearly place the risk of overall cost with the government.

- Fixed-price contracts commit vendors to perform and complete a contract at a predetermined price ceiling. To a significant extent, the profitability associated with a fixed-price contract is dependent upon the vendor's ability to accurately appraise, in advance, the cost of providing services. Managing fixed-price contracts successfully requires an extremely well written and detailed statement of work and project scope. The risk of completion is placed on the vendor.

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- Level of effort (LOE) or time and materials (T&M) contracts provide for a fixed-price hourly-billing rate for the various labor categories to be applied to a contract plus reimbursement by the government for travel, supplies, equipment, and other materials required to satisfy the terms of the contract. The primary variable is the number of hours of each category to be used in performing assigned tasks. In many competitive situations, vendors are required to combine their contracts with a "not-to-exceed" clause that essentially imposes cost ceilings on the contract.

2. Preferred Contract Types

In earlier studies, vendors more clearly preferred a mixture of contract types in order to minimize their financial risks. However, as shown in Exhibit V-14, vendors now indicate a stronger preference for fixed-price contracts.

EXHIBIT V-14

VENDOR PREFERENCE FOR CONTRACT TYPE FOR PROFESSIONAL SERVICES

Preferred Contract Type	Percentages	
	Vendors	Agencies
Cost Plus/Cost Plus Incentive Fee	23	[36]
Fixed Price	[47]	30
Mix	23	24
Other	7	10

Rating: [ ] = Most Preferred.

Updated 1988.

Adhering to fixed-price contracts has several implications for vendors. Vendors have shifted their contract preferences because they expect to experience decreasing profit margins and therefore will need to more accurately assess their costs of doing business and trim operations where possible. Furthermore, vendors were of the opinion that the DoD was attempting to limit the profits made by contractors.

A number of vendors classified LOE and T&M contracts as fixed-price since each hourly-billing rate is fixed for the duration of the contract. As noted earlier, however, the federal government's general preference for

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"overall lowest cost," or price, has led to a number of vendors offering bids with unpaid overtime or minimum wages for some technical levels.

The vendors were also evenly split in their preference for cost-plus and a "mix" of contracts. Vendors will continue to prefer a mixture of types of contracts in order to minimize their financial risk. This particularly applies to programming and analysis contracts where the financial risks are substantial.

Industry respondents were also exploring opportunities to provide professional services to federal agencies under Multiple Award Schedule Basic Ordering Agreements. Fifty percent of all the respondents surveyed in the 1989 study were providing services under BOAs. Contracts mentioned included FEDSIM, GSA, Energy, and DoD.

Half of the respondents in the 1989 update did not have an opinion on the value of SETA contracting as a contract vehicle for agencies to use in acquiring professional services. Exhibit V-15 shows that of those that did have an opinion, vendors were equally split on the merits of SETA contracts. SETA contracting is appropriate for those contracts with loosely defined requirements—it's a more flexible vehicle for the agency and for the contractor. It can also be a poor vehicle because it limits access to specialized workers that may be required for high-level studies.

EXHIBIT V-15

VENDOR PERCEPTION OF SETA CONTRACTING FOR PROFESSIONAL SERVICES

Perception	Percent of Respondents	Reasons
Best Contracting Vehicle	25	• Flexible
Poor Contracting Vehicle	25	• No access to high-level skill sets
No Opinion	50	

3. Characteristics of a Successful Contractor

As shown in Exhibit V-16, the vendors ranked price, staff experience, and software development as the three most important characteristics.

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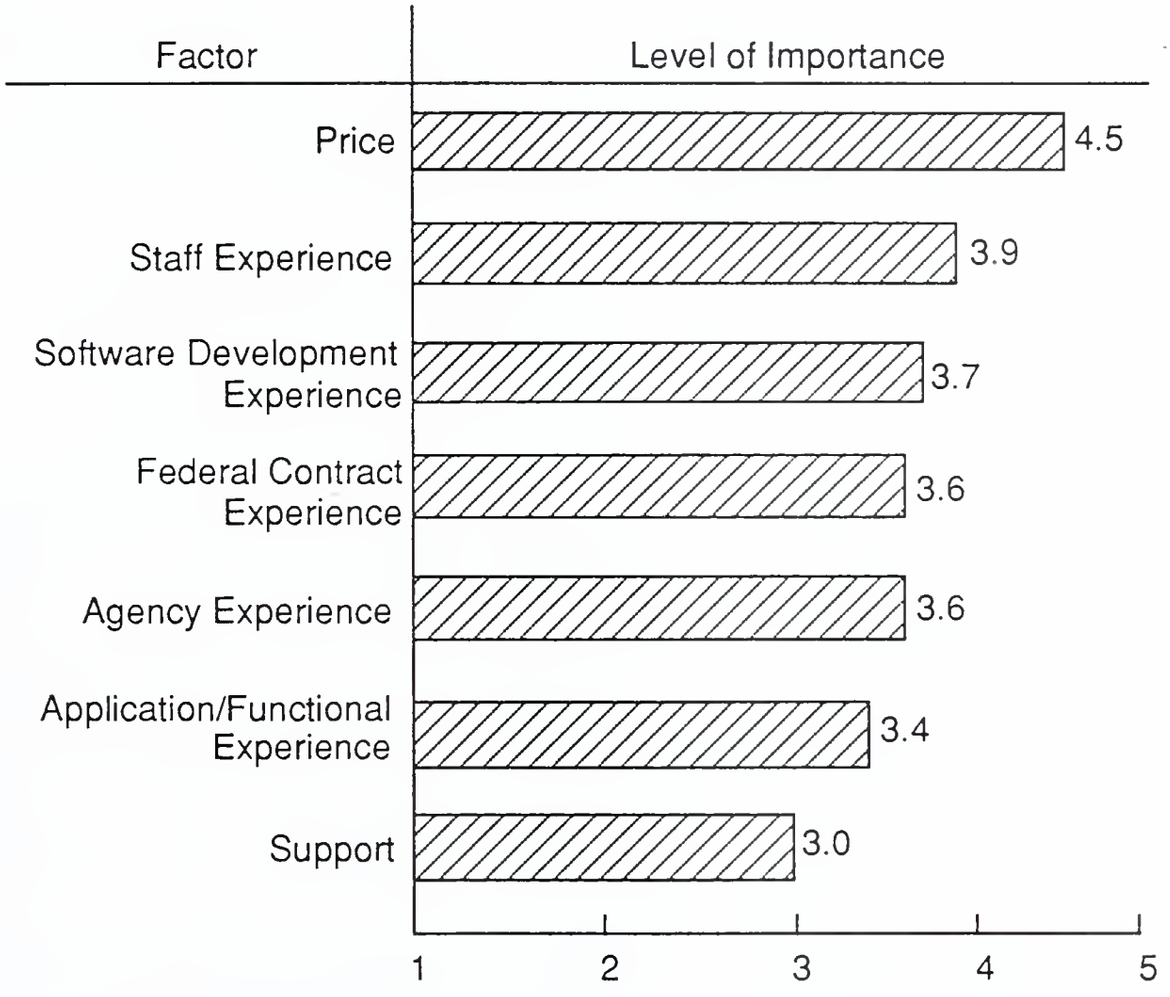
EXHIBIT V-16

VENDOR PERCEPTION OF THE RELATIVE IMPORTANCE OF VENDOR CHARACTERISTICS TO FEDERAL AGENCIES



Updated 1988.

Support and hardware experience were rated as the least important of all characteristics by the vendors. As previously noted, these characteristics were reported by government respondents as important in winning a bid. This incongruence needs to be addressed.

One reason for the divergence of opinion was that agency respondents were looking at the situation after the bid had been awarded, whereas contractor respondents were primarily oriented toward getting the business rather than operating the contract. However, vendors should emphasize their support capabilities and preference in their bids. Unfortunately, it is INPUT's experience that most professional service vendors cannot

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provide evidence of customer satisfaction since they do not carry out systematic surveys in this area. INPUT's own surveys often return unexpected results, especially in highly-focused areas.

4. Perception of Most-Attractive Product or Service

Vendors were asked which of their company's professional services or product capabilities they thought agencies found most attractive. The responses ranged from the specific categories of professional services under study in this survey and extended to other products or services related to the vendors' areas of expertise. Results are illustrated in Exhibit V-17.

EXHIBIT V-17

VENDOR RANKING OF ATTRACTIVE PRODUCTS AND SERVICES TO GOVERNMENT AGENCIES

Products/Services	Rank*
Software Development	1
Consulting	2
Project Management	3
Financial Systems	4
Support	5

* Rank based on frequency of mention by respondents.

Vendors believed that software development is most attractive because of:

- Most agencies' traditional reluctance to use prepackaged solutions (which may now be changing)
- Continuing shortage of qualified in-house technical staff

The presence of financial systems is an interesting entry, possibly reflecting the growing interest in standardization, being promulgated by the Joint Financial Management Improvement Program. This item, an application area, does not fit with the other four, which are functional areas. For example, a financial systems contract could involve software development, consulting, project management, or support.

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5. Selection Criteria

Vendors need to better understand and respond to the criteria utilized by the government in selecting a winning vendor for professional services. As shown in Exhibit V-18, vendor respondents considered the proposed technical solution the number-one selection criterion.

EXHIBIT V-18

VENDOR PERCEPTION OF THE IMPORTANCE OF CONTRACTOR SELECTION CRITERIA TO FEDERAL AGENCIES

Selection Criteria	Vendor Ranking	Agency Ranking
Proposed Technical Solution	1	1
Cost	2	4
Vendor Reputation	3	2
Project Management	4	5
Staff Experience	5	3

Updated 1988.

As noted earlier in Exhibit IV-4, an earlier survey of agencies did not concur with the vendor perceptions, except for the proposed technical solution. Many vendors noted, however, that the technical solution is usually the entrance ticket to a price, not cost, "shoot-out," where either the preferred or lowest-priced vendor wins.

D Trends

1. Increases/Decreases in Professional Services

A majority of the vendors surveyed in the 1988 report predicted an increase in the amount of professional services work with the government over the next two to five years, as shown in Exhibit V-19.

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EXHIBIT V-19

VENDOR-EXPECTED CHANGE IN CONTRACTING FOR PROFESSIONAL SERVICES

Professional Services Category	Percent of Respondents			Average Change* (Percent)
	Expected Increase	Expected Decrease	No Change	
Consulting Services	46	8	46	30
Education and Training	31	—	69	7
Software Development	38	8	54	30
Systems Operations	39	—	61	25

* Change over the next five years, GFY 1988-1992.

Updated 1988.

The majority of the vendors surveyed viewed the government's increased use of packaged software as not hindering the professional services market. The respondents were of the opinion that there will still be ample opportunities for modification, installation, and training by professional service vendors. Furthermore, vendors commented that the federal agencies do not have the necessary in-house expertise to perform many of the software-related services.

Industry respondents in the 1988 study were also asked their opinion on whether the government would increase its procurement of System Engineering/Technical Assistance (SETA) contracts. Eighty-four percent of the respondents felt that the government would increase its contracting for SETA due to the lack of federal personnel to accomplish these tasks. Vendors noted that some of the SETA awards may become part of other larger contracts at agencies.

2. Factors Affecting Government Spending

Vendors surveyed by INPUT suggested numerous factors that could increase or decrease federal government spending on professional serv-

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ices in the next five years. INPUT grouped these factors into the four categories presented in Exhibit V-20.

EXHIBIT V-20

RANKING OF FACTORS AFFECTING FUTURE GOVERNMENT SPENDING FOR PROFESSIONAL SERVICES

Factor	Rank*	Positive or Negative Effect
Budget Changes (Authorization, Appropriation, Apportionment)	1	Negative
Government Personnel Availability	2	Positive
Regulatory Policy Changes	3	Positive
Price	4	Negative

* Rank based on frequency of mention by respondents.
Updated 1988.

- The factor that had the most consensus among vendors was the impact of budget changes. The most frequently mentioned factor was the emphasis on budget cuts and changes in authorization and appropriations.

- The availability of government personnel was also considered an important factor. Included in this factor is not only the shortage resulting from congressionally-imposed limits on agency staffing but also the lack of sufficient numbers of specialists and managers in newer ADP technology within the government. Due to a lack of experienced personnel, agencies will be forced to seek the services of vendors.

- Regulatory policy changes, in particular OMB A-76 and OMB A-130, were considered to be important influences. Circular A-76 recommends the use of the private sector by federal agencies for services; and A-130 guidelines to agencies create more opportunities for professional services vendors.

- The cost of acquiring professional services was mentioned as a possible negative factor affecting future use of services by agencies. The more expensive a product or service is, the less likely it will be purchased.

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3. Industry Trends Affecting Vendor Revenue

The factors that vendors believe will impact their professional services revenues were numerous and varied. INPUT listed the responses in order of frequency mentioned in Exhibit V-21A.

EXHIBIT V-21A

RANKING OF INDUSTRY TRENDS AFFECTING REVENUE IN THE FEDERAL MARKET

Industry Trends	Rank*
New Technology	1
Industry Standardization Efforts	2
Increased Competition Due to CICA	3
Consolidation of Contracts	4

* Rank based on frequency of mention by respondents.

Updated 1988.

- Federal agencies are demanding the benefits of new technology in hardware, software, languages, and associated peripherals. Outside services will be needed to allow agencies to be more efficient in their use of new technological products.

  The impact of changing technology on vendors of professional services was explored further in the 1989 update. Results are summarized in Exhibit V-21B. Vendors are forced to continually acquire additional technological expertise to keep up-to-date with new hardware and software products. They must be more flexible to offer a myriad of technical solutions to clients problems. The availability of enhanced programmer tools and "revisable software solutions" increases programmer productivity and reduces the associated costs to the government. It was also mentioned that the impact is seen in actual costs, not in how vendors interface with agencies.

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EXHIBIT V-21B

IMPACT OF TECHNOLOGY ON PROFESSIONAL SERVICES VENDORS

Impact	Percent of Responses
Acquire More Technical Expertise	57
Increase Responsiveness	43
Increase Programmer Productivity	14
Impacts Cost	14

- Professional services opportunities will also increase due to emerging federal standards. Outside contractors will be sought to provide assistance in designing new systems, and connecting existing systems in adherence to federal standards.

- The Competition In Contracting Act (CICA) was designed to bring fair and open competition to the contract award process. Opening the market to an increasing number of vendors was believed by the respondents to be a major force shaping their future revenues. It prevents sole source awards, and presents more opportunities for vendors to pursue. Several vendors noted that some new entrants appear to be "niche" players.

- Although not truly an industry trend, respondents expressed their concern over the increase in the number of consolidated contracts by agencies. By creating an easier procurement process for agencies to secure services, the federal government has decreased the number of different opportunities for contractors and fostered more intense competition among vendors.

4. Technology Trends

In the 1988 study, 67% of the vendors were qualified in Ada, as shown in Exhibit V-22. These same vendors did not report having a great deal of contract work that required the use of this Ada expertise. Another 19% reported that they are planning to become qualified in Ada when it is required in order to acquire contracts for professional services work.

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EXHIBIT V-22

CURRENT AND PLANNED VENDOR QUALIFICATION IN ADA

Status	Percent of Respondents
Vendors currently qualified in Ada	67
Vendors planning to become qualified	19
Vendors with no current plans for Ada	14
Total	100

Updated 1988.

Industry representatives were also asked to identify those technological factors that would alter the federal government's spending for professional services. The factors named most frequently are listed in Exhibit V-23.

EXHIBIT V-23

VENDOR RANKING OF TECHNOLOGICAL FACTORS AFFECTING FUTURE GOVERNMENT SPENDING FOR PROFESSIONAL SERVICES

Factor	Rank*
Increase in optical disk storage capabilities	1
Developments in artificial intelligence	2
Standardization efforts	3
Developments in interface capabilities	4
Increase in use of supercomputers	5
Telecommunications developments	6
Increased use of fiber optics	7

*Rank based on frequency of mention by respondents.

Updated 1988.

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- The increase in optical disk storage system capabilities was most frequently cited by the vendors as having a strong impact on future professional service acquisitions. Agencies are already seeking to procure these optical disk storage systems as they attempt to upgrade their major information systems. Strong and continuing consulting support is needed to assist agencies in taking advantage of these systems.

- Artificial intelligence is gaining in usage in tactical situations, automated planning, and support applications throughout the DoD. Large-scale information processing is the principle area of applications for AI as it is developing in the civil agencies.

- Standards are being established through a consensus of federal regulatory and standards organizations, industry organizations such as ANSI and IEEE, and the vendor community. Progress toward development of OSI standards is being realized through the recent cooperation of U.S. industry and governmental efforts. OMB is considering mandating the use of OSI-compatible systems throughout the federal government. The issuance of a government-wide policy for OSI would help to aggregate the market and establish consistency with commercial product development

E

Recommendations

Vendors should resign themselves to the fact that, while program managers may prefer incentive contracts, most contracting officers will prefer to do business on a fixed-price basis. Vendors need to find, and put into practice, methods of pricing and managing professional services contracts that allow them to minimize the risk of poor performance on a fixed-price basis, or they will not be able to compete successfully in the government marketplace. To minimize costs and remain competitive, vendors need to make maximum use of automated tools to increase their productivity. Exhibit V-24 addresses this recommendation and those that follow.

Given the various federal consolidation and standardization initiatives, any service that stresses standards or interoperability will likely fare well. For example, at this writing only two companies, AMS and CDSI, offer financial software packages that comply with JFMIP Core requirements. Both companies are obtaining significant professional services business in connection with these packages.

Vendors should vertically penetrate potential agency customers to better understand the agency mission and functions and to solve the agency problems, not modify the problem to meet an available solution. Much can be accomplished by stressing the benefits to the customer, rather than the benefits of the service. While this appears to contradict some earlier stated agency opinions, the need to sympathize and empathize with agency customers is seen as frequently desirable.

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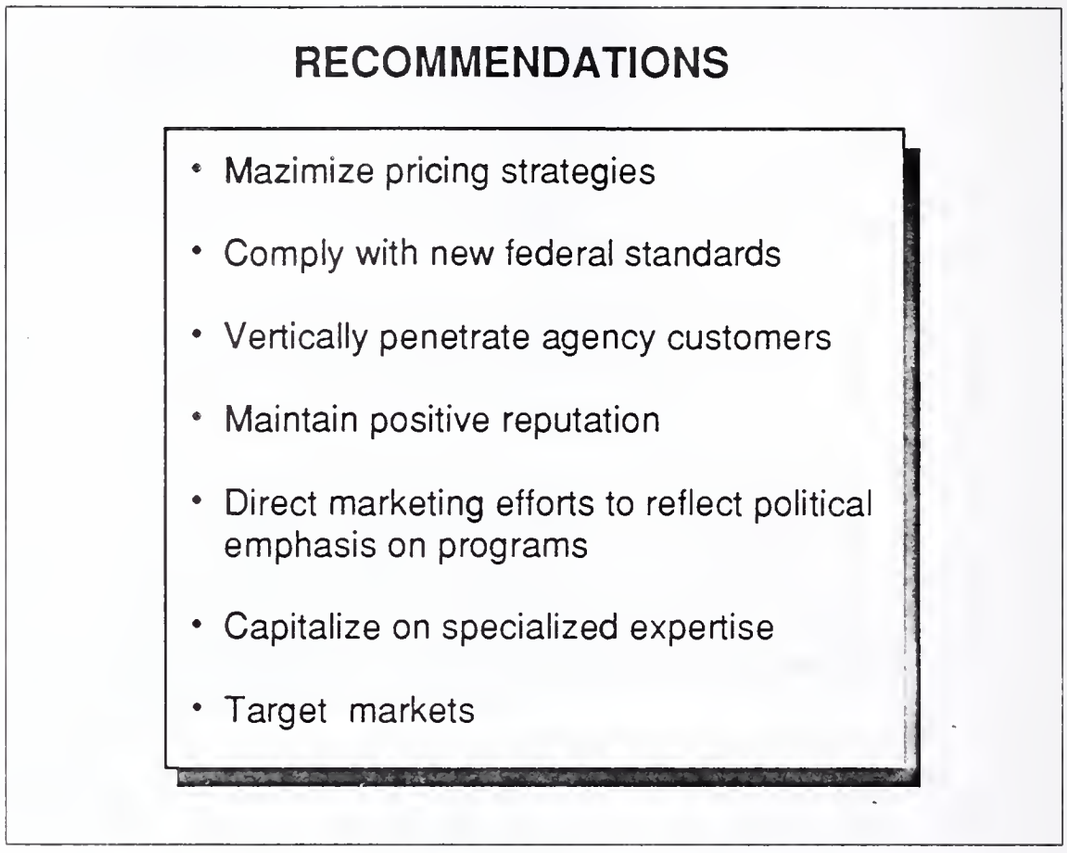
EXHIBIT V-24



Vendors should also be aware that, especially in the civil agencies, their reputation is an important factor in whether they can win work with an agency. The government is a "small community," and a questionable reputation in one agency can impede getting work in another. Overcoming a "poor" reference can take a long time. It is extremely important that vendors regularly and systematically survey their agency customers to determine problems, satisfaction levels, trends, and opportunities. This should not be done through the field staff but by a central organization. In at least part of the survey, an independent third party should be employed to prevent biases and provide objective standards.

Vendors can make more effective use of their marketing budget if they emphasize their marketing in areas that are politically popular. In election years, Congress reacts to programs that gain or hold votes. In presidential election years, budgets are more likely to emphasize domestic issues than technology or defense.

The surveys of government agencies revealed projected increases in the amount of future contracting for systems operations. In addition, similar increases are projected for software development. This type of work requires specialized expertise that not all vendors possess; however, vendors that do should ensure that they take advantage of this potential growth area. These areas may not always be attractive as developing state-of-the-art systems but they are less risky and often financially more rewarding.

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Opportunities for involvement with the increasing number of government supercomputer installations will require new programming and engineering skills that closely match the proposed areas of application. Vendors interested in this submarket need careful research of the target to assure prospects.

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